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APRIL 1981 NUMBER 440 -- Part I

# Solar-Geophysical Data prompt reports

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# Solar - Geophysical Data

NO. 440 APRIL 1981

## Part I (Prompt Reports)

DATA FOR
MARCH 1981
FEBRUARY 1981

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To standardize referencing these reports in the open literature, the following format is recommended:
Solar-Geophysical Data, 426 Part I (or Part II), pages, February 1980, U.S. Department of Commerce (Boulder, Colorado, U.S.A. 80303).

# SOLAR-GEOPHYSICAL DATA

No. 440

*Issued in two parts*

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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----- = no data available.
blank = data not yet received.

SGD 440 Part I (Prompt)

# MARCH 1981 DATA

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# ALERT PERIODS

## INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

**MARCH 1981**

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

01 MARCH 1981 PRESTO KAKIOKA 01/0850Z MAGSTORM 01/0737Z
05 MARCH 1981 PRESTO TOYOKAWA 05/0850Z TENFLARE 100 FLUX UNITS 05/0710Z DURATION 10 MINUTES
05 MARCH 1981 PRESTO BOULDER 05/1300Z STRONG MAGSTORM IN PROGRESS 05/1300Z MAGNETIC A GREATER THAN OR EQUAL TO 50
07 MARCH 1981 PRESTO TOYOKAWA 07/0743Z TENFLARE 110 FLUX UNITS 07/0610Z DURATION 40 MINUTES
13 MARCH 1981 PRESTO BOULDER 13/2313Z TENFLARE 350 FLUX UNITS 13/2058Z DURATION 07 MINUTES
21 MARCH 1981 PRESTO BOULDER 21/1725Z TENFLARE 210 FLUX UNITS 21/1611Z DURATION 10 MINUTES
22 MARCH 1981 PRESTO BOULDER 22/1500Z TENFLARE 330 FLUX UNITS 22/2342Z DURATION 20 MINUTES
23 MARCH 1981 PRESTO BOULDER 23/0015Z SOFLARE M8/2B N08W47 22/2340Z DURATION 26 MINUTES
23 MARCH 1981 PRESTO TOYOKAWA 23/0023Z TENFLARE 120 FLUX UNITS 22/2144Z
23 MARCH 1981 PRESTO TOYOKAWA 23/0026Z TENFLARE 110 FLUX UNITS 22/2350Z DURATION 10 MINUTES
25 MARCH 1981 PRESTO BOULDER 25/2049Z SOFLARE X1/2B N09W89 25/2038Z DURATION 46 MINUTES
25 MARCH 1981 PRESTO BOULDER 25/2049Z TENFLARE 220 FLUX UNITS DURATION IN PROGRESS
26 MARCH 1981 PRESTO BOULDER 26/2253Z TENFLARE 310 FLUX UNITS 26/1938Z DURATION 03 MINUTES
28 MARCH 1981 PRESTO TOYOKAWA 28/0413Z TENFLARE 110 FLUX UNITS 28/0403Z DURATION 07 MINUTES
30 MARCH 1981 PRESTO SYDNEY 30/0033Z TENFLARE FLEURS 424 FLUX UNITS MAXIMUM 30/0022Z
30 MARCH 1981 PRESTO BOULDER 30/1430Z PROTON EVENT BEGAN AT 30/1226Z. 13 PROTONS/CM2/SEC/STER AT GREATER THAN 10 MEV AT 30/1230Z
30 MARCH 1981 PRESTO TOYOKAWA 30/0315Z TENFLARE 340 FLUX UNITS 30/0006Z DURATION 90 MINUTES

SUMMARY OF THE GEOALERT WWA MESSAGES

| Message serial number | Date of issue | Date of observation | Wolf number | 10 cm solar flux | A index | Active Regions: Location Lat-Long | Flares: No. of Total | Flares: M | Flares: X | Outstanding events | Forecasts: Date | Forecasts: Location Lat-Long | Forecasts: Desc* | Alert Situations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 060 | 01 | 28 | 184 | 232 | 011 | N14W91 | 0 | 0 | 0 | | 01 | N14W91 | Q | SOLALERT 01/02 |
| | | | | | | S16W36 | 0 | 0 | 0 | | | S16W36 | Q | MAGALERT 01/02 |
| | | | | | | S06W15 | 0 | 0 | 0 | | | S06W15 | Q | |
| | | | | | | S15W04 | 3 | 0 | 0 | | | S15W04 | A | |
| | | | | | | N17W02 | 1 | 0 | 0 | | | N17W02 | Q | |
| | | | | | | S08W02 | 0 | 0 | 0 | | | S08W02 | Q | |
| | | | | | | S14E22 | 3 | 0 | 0 | | | S14W22 | P | |
| | | | | | | S15E51 | 6 | 0 | 0 | | | S15E51 | Q | |
| | | | | | | S04E63 | 0 | 0 | 0 | | | S04E63 | Q | |
| 061 | 02 | 01 | 220 | 231 | 029 | S16W50 | 0 | 0 | 0 | | 02 | S16W50 | Q | SOLALERT 02/XX |
| | | | | | | N21W41 | 0 | 0 | 0 | | | N21W41 | Q | MAGALERT 02/03 |
| | | | | | | S07W28 | 0 | 0 | 0 | | | S07W28 | Q | |
| | | | | | | N19W16 | 0 | 0 | 0 | | | N18W16 | Q | |
| | | | | | | S08W16 | 2 | 0 | 0 | | | S08W16 | Q | |
| | | | | | | S15W16 | 3 | 0 | 0 | | | S15W16 | A | |
| | | | | | | S12E07 | 1 | 0 | 0 | | | S12E07 | P | |
| | | | | | | S13E33 | 3 | 0 | 0 | | | S13E33 | E | |
| | | | | | | S03E47 | 0 | 0 | 0 | | | S03E47 | Q | |
| | | | | | | N04E66 | 1 | 0 | 0 | | | N04E66 | Q | |
| 062 | 03 | 02 | 240 | 246 | 025 | S15W63 | 0 | 0 | 0 | Presto Kakioka | 03 | S15W63 | Q | SOLALERT 03/05 |
| | | | | | | N21W53 | 0 | 0 | 0 | 01/0850Z Magstorm | | N21W53 | Q | MAGALERT 04 |
| | | | | | | S05W42 | 0 | 0 | 0 | 01/0737Z | | S05W42 | Q | |
| | | | | | | S15W30 | 9 | 2 | 0 | | | S15W30 | E | |
| | | | | | | N18W28 | 2 | 0 | 0 | | | N18W28 | Q | |
| | | | | | | S08W27 | 0 | 0 | 0 | | | S08W27 | Q | |
| | | | | | | S12W05 | 7 | 1 | 0 | | | S12W05 | A | |
| | | | | | | S12E20 | 2 | 0 | 0 | | | S12E20 | E | |
| | | | | | | S03E33 | 0 | 0 | 0 | | | S03E33 | Q | |
| | | | | | | N03E53 | 0 | 0 | 0 | | | N03E53 | Q | |
| | | | | | | N08E65 | 0 | 0 | 0 | | | N08E65 | Q | |
| | | | | | | S06E70 | 4 | 0 | 0 | | | S06E70 | Q | |
| 063 | 04 | 03 | 239 | 248 | 005 | S14W79 | 0 | 0 | 0 | | 04 | S14W79 | Q | SOLALERT 04/05 |
| | | | | | | N21W68 | 0 | 0 | 0 | | | N21W68 | E | MAGALERT MINOR 04/05 |
| | | | | | | S07W56 | 0 | 0 | 0 | | | S07W56 | Q | |
| | | | | | | N18W42 | 0 | 0 | 0 | | | N18W42 | Q | |
| | | | | | | S09W42 | 0 | 0 | 0 | | | S09W42 | Q | |
| | | | | | | S17W41 | 1 | 0 | 0 | | | S17W41 | A | |
| | | | | | | S12W20 | 0 | 0 | 0 | | | S12W20 | A | |
| | | | | | | S12E08 | 0 | 0 | 0 | | | S12E08 | E | |
| | | | | | | S03E21 | 0 | 0 | 0 | | | S03E21 | Q | |
| | | | | | | N04E42 | 0 | 0 | 0 | | | N04E42 | Q | |
| | | | | | | N10E56 | 0 | 0 | 0 | | | N10E56 | Q | |
| | | | | | | S03E59 | 1 | 0 | 0 | | | S03E59 | E | |
| 064 | 05 | 04 | 255 | 255 | 012 | S14W90 | 0 | 0 | 0 | | 05 | S14W90 | Q | SOLALERT 05 |
| | | | | | | N19W80 | 1 | 0 | 0 | | | N19W80 | E | MAGALERT MINOR 05/06 |
| | | | | | | N17W58 | 0 | 0 | 0 | | | N17W58 | Q | |
| | | | | | | S16W55 | 5 | 2 | 0 | | | S16W55 | A | |
| | | | | | | S12W31 | 3 | 0 | 0 | | | S12W31 | A | |
| | | | | | | N08W27 | 1 | 0 | 0 | | | N08W27 | Q | |
| | | | | | | S12W07 | 0 | 0 | 0 | | | S12W07 | E | |
| | | | | | | S03E09 | 0 | 0 | 0 | | | S03E09 | Q | |
| | | | | | | N05E27 | 0 | 0 | 0 | | | N05E27 | Q | |
| | | | | | | N10E41 | 1 | 0 | 0 | | | N10E41 | Q | |
| | | | | | | S04E44 | 4 | 0 | 0 | | | S04E44 | E | |
| | | | | | | N13E59 | 0 | 0 | 0 | | | N13E59 | Q | |
| | | | | | | N26E61 | 1 | 0 | 0 | | | N26E61 | E | |
| 065 | 06 | 05 | 228 | 231 | 052 | N17W68 | 0 | 0 | 0 | Presto Toyokawa | 06 | N17W68 | Q | SOLALERT 06/XX |
| | | | | | | S16W68 | 4 | 0 | 0 | 05/0850Z Tenflare | | S16W68 | A | MAGALERT 06/07 |
| | | | | | | S12W43 | 1 | 0 | 0 | 100 Flux Units | | S12W43 | E | |
| | | | | | | N09W38 | 0 | 0 | 0 | 05/0710Z Duration | | N09W38 | E | |
| | | | | | | S11W20 | 0 | 0 | 0 | 10 Minutes. Presto | | S11W20 | E | |
| | | | | | | S03W05 | 0 | 0 | 0 | Boulder 05/1300Z | | S03W05 | Q | |
| | | | | | | N05E15 | 2 | 1 | 0 | Strong Magstorm in | | N05E15 | Q | |
| | | | | | | N09E29 | 0 | 0 | 0 | Progress 05/1300Z | | N09E29 | Q | |
| | | | | | | S04E30 | 3 | 1 | 0 | Magnetic A Greater | | S04E30 | A | |
| | | | | | | N13E48 | 2 | 0 | 0 | Than or Equal to 50 | | N13E48 | Q | |
| | | | | | | N27E49 | 0 | 0 | 0 | | | N27E49 | Q | |
| | | | | | | N25E52 | 0 | 0 | 0 | | | N25E52 | E | |
| 066 | 07 | 06 | 204 | 216 | 010 | N19W82 | 0 | 0 | 0 | | 07 | N19W82 | Q | SOLALERT 07/XX |
| | | | | | | S16W82 | 1 | 1 | 0 | | | S16W82 | E | MAGNIL |
| | | | | | | S11W58 | 0 | 0 | 0 | | | S11W58 | E | |
| | | | | | | N09W52 | 0 | 0 | 0 | | | N09W52 | Q | |
| | | | | | | S11W34 | 0 | 0 | 0 | | | S11W34 | E | |
| | | | | | | S02W19 | 0 | 0 | 0 | | | S02W19 | Q | |
| | | | | | | N14E00 | 0 | 0 | 0 | | | N14E00 | Q | |
| | | | | | | N11E12 | 0 | 0 | 0 | | | N11E12 | Q | |
| | | | | | | S04E19 | 1 | 0 | 0 | | | S04E19 | E | |
| | | | | | | N28E32 | 0 | 0 | 0 | | | N28E32 | Q | |
| | | | | | | N13E35 | 0 | 0 | 0 | | | N13E35 | Q | |
| | | | | | | N24E39 | 0 | 0 | 0 | | | N24E39 | Q | |
| | | | | | | N08E65 | 0 | 0 | 0 | | | N08E65 | | |

# ALERT PERIODS

## INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

**MARCH 1981**

SUMMARY OF THE GEOALERT WWA MESSAGES

| Message serial number | Date of issue | Date of observation | Wolf number | 10 cm solar flux | A index | Active Regions: Location Lat-Long | No. of Flares: Total | M | X | Outstanding events | Forecasts: Date | Location Lat-Long | Desc* | Alert Situations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 067 | 08 | 07 | 207 | 205 | 017 | S18W96 | 1 | 1 | 0 | | 08 | S18W96 | E | SOLNIL |
| | | | | | | S12W72 | 2 | 0 | 0 | | | S12W72 | E | MAGQUIET |
| | | | | | | N08W66 | 0 | 0 | 0 | | | N08W66 | Q | |
| | | | | | | S12W51 | 0 | 0 | 0 | | | S12W51 | Q | |
| | | | | | | S03W34 | 0 | 0 | 0 | | | S03W34 | Q | |
| | | | | | | N09W22 | 1 | 0 | 0 | | | N09W22 | Q | |
| | | | | | | N03W15 | 1 | 0 | 0 | | | N03W15 | Q | |
| | | | | | | N12W03 | 1 | 0 | 0 | | | N12W03 | Q | |
| | | | | | | S04E05 | 1 | 0 | 0 | | | S04E05 | A | |
| | | | | | | N28E15 | 0 | 0 | 0 | | | N28E15 | Q | |
| | | | | | | N16E20 | 1 | 0 | 0 | | | N16E20 | Q | |
| | | | | | | N25E25 | 0 | 0 | 0 | | | N25E25 | Q | |
| | | | | | | N09E54 | 4 | 0 | 0 | | | N09E54 | Q | |
| 068 | 09 | 08 | 215 | 205 | 009 | S12W85 | 0 | 0 | 0 | | 09 | S12W85 | E | SOLQUIET |
| | | | | | | S12W64 | 1 | 0 | 0 | | | S12W64 | Q | MAGQUIET |
| | | | | | | S03W47 | 0 | 0 | 0 | | | S03W47 | Q | |
| | | | | | | N10W34 | 0 | 0 | 0 | | | N10W34 | Q | |
| | | | | | | N03W29 | 0 | 0 | 0 | | | N03W29 | Q | |
| | | | | | | N12W16 | 0 | 0 | 0 | | | N12W16 | Q | |
| | | | | | | S09W11 | 0 | 0 | 0 | | | S09W11 | Q | |
| | | | | | | S04W10 | 1 | 0 | 0 | | | S04W10 | E | |
| | | | | | | N28E03 | 2 | 0 | 0 | | | N28E03 | Q | |
| | | | | | | N25E13 | 1 | 0 | 0 | | | N25E13 | Q | |
| | | | | | | N17E14 | 0 | 0 | 0 | | | N17E14 | Q | |
| | | | | | | N08E39 | 9 | 0 | 0 | | | N08E39 | E | |
| | | | | | | N11E47 | 0 | 0 | 0 | | | N11E47 | Q | |
| | | | | | | S05E75 | 0 | 0 | 0 | | | S05E75 | Q | |
| 069 | 10 | 09 | 209 | 206 | 004 | S10W76 | 0 | 0 | 0 | Presto Toyokawa | 10 | S10W76 | Q | SOLQUIET |
| | | | | | | S02W61 | 0 | 0 | 0 | 07/0743Z Tenflare | | S02W61 | Q | MAGQUIET |
| | | | | | | N04W42 | 0 | 0 | 0 | 110 Flux Units | | N04W42 | Q | |
| | | | | | | N11W30 | 1 | 0 | 0 | 07/0610Z Duration | | N11W30 | Q | |
| | | | | | | S04W22 | 0 | 0 | 0 | 40 Minutes. | | S04W22 | E | |
| | | | | | | N24E01 | 0 | 0 | 0 | | | N24E01 | Q | |
| | | | | | | N12E13 | 0 | 0 | 0 | | | N12E13 | Q | |
| | | | | | | N08E25 | 11 | 1 | 0 | | | N08E25 | E | |
| | | | | | | N10E35 | 0 | 0 | 0 | | | N10E35 | Q | |
| | | | | | | S05E62 | 1 | 0 | 0 | | | S05E62 | Q | |
| 070 | 11 | 10 | 202 | 206 | 007 | S11W90 | 0 | 0 | 0 | | 11 | S11W90 | Q | SOLQUIET |
| | | | | | | S03W73 | 0 | 0 | 0 | | | S03W73 | Q | MAGQUIET |
| | | | | | | N03W56 | 0 | 0 | 0 | | | N03W56 | Q | |
| | | | | | | N11W44 | 0 | 0 | 0 | | | N11W44 | Q | |
| | | | | | | S04W37 | 3 | 0 | 0 | | | S04W37 | E | |
| | | | | | | S19W31 | 0 | 0 | 0 | | | S19W31 | Q | |
| | | | | | | N30W22 | 0 | 0 | 0 | | | N30W22 | Q | |
| | | | | | | N25W13 | 1 | 0 | 0 | | | N25W13 | Q | |
| | | | | | | N12W00 | 1 | 0 | 0 | | | N12W00 | Q | |
| | | | | | | N07E13 | 6 | 0 | 0 | | | N07E13 | E | |
| | | | | | | S06E53 | 0 | 0 | 0 | | | S06E53 | Q | |
| | | | | | | N09E64 | 0 | 0 | 0 | | | N09E64 | Q | |
| 071 | 12 | 11 | 212 | 204 | 007 | S03W86 | 0 | 0 | 0 | | 12 | S03W86 | Q | SOLQUIET |
| | | | | | | N02W70 | 0 | 0 | 0 | | | N02W70 | Q | MAGQUIET |
| | | | | | | N10W57 | 0 | 0 | 0 | | | N10W57 | Q | |
| | | | | | | S04W52 | 4 | 0 | 0 | | | S04W52 | E | |
| | | | | | | S21W42 | 0 | 0 | 0 | | | S21W42 | Q | |
| | | | | | | N25W25 | 2 | 0 | 0 | | | N25W25 | Q | |
| | | | | | | N12W14 | 0 | 0 | 0 | | | N12W14 | Q | |
| | | | | | | N18W02 | 0 | 0 | 0 | | | N18W02 | Q | |
| | | | | | | N07W01 | 5 | 0 | 0 | | | N07W01 | E | |
| | | | | | | S05E40 | 2 | 0 | 0 | | | S05E40 | Q | |
| | | | | | | S20E50 | 0 | 0 | 0 | | | S20E50 | Q | |
| | | | | | | N12E52 | 1 | 0 | 0 | | | N12E52 | Q | |
| | | | | | | S08E54 | 0 | 0 | 0 | | | S08E54 | Q | |
| 072 | 13 | 12 | 202 | 191 | 010 | N02W82 | 0 | 0 | 0 | | 13 | N02W82 | Q | SOLQUIET |
| | | | | | | N11W71 | 0 | 0 | 0 | | | N11W71 | Q | MAGQUIET |
| | | | | | | S03W66 | 0 | 0 | 0 | | | S03W66 | E | |
| | | | | | | N25W37 | 1 | 0 | 0 | | | N25W37 | Q | |
| | | | | | | N18W22 | 0 | 0 | 0 | | | N18W22 | Q | |
| | | | | | | N06W15 | 3 | 0 | 0 | | | N06W15 | E | |
| | | | | | | S05E26 | 6 | 0 | 0 | | | S05E26 | E | |
| | | | | | | S21E38 | 1 | 0 | 0 | | | S21E38 | Q | |
| | | | | | | S07E41 | 0 | 0 | 0 | | | S07E41 | Q | |
| | | | | | | N10E42 | 0 | 0 | 0 | | | N10E42 | Q | |
| | | | | | | N16E61 | 0 | 0 | 0 | | | N16E61 | Q | |
| 073 | 14 | 13 | 207 | 204 | 016 | N11W86 | 0 | 0 | 0 | Presto Boulder | 14 | N11W86 | Q | SOLALERT 14/15 |
| | | | | | | S03W81 | 0 | 0 | 0 | 13/2313Z Tenflare | | S03W81 | E | MAGQUIET |
| | | | | | | S12W75 | 7 | 0 | 0 | 350 Flux Units | | S12W75 | E | |
| | | | | | | N20W54 | 0 | 0 | 0 | 13/2058Z Duration | | N20W54 | Q | |
| | | | | | | N25W50 | 1 | 0 | 0 | 7 Minutes | | N25W50 | E | |
| | | | | | | N08W28 | 8 | 2 | 0 | | | N08W28 | E | |
| | | | | | | S05E13 | 3 | 0 | 0 | | | S05E13 | E | |
| | | | | | | S20E25 | 0 | 0 | 0 | | | S20E25 | Q | |
| | | | | | | N09E29 | 0 | 0 | 0 | | | N09E29 | Q | |
| | | | | | | N18E50 | 0 | 0 | 0 | | | N18E50 | Q | |
| | | | | | | N08E78 | 1 | 0 | 0 | | | N08E78 | Q | |

# ALERT PERIODS

## INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

### MARCH 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

| Message serial number | Date of issue | Date of observation | Wolf number | 10 cm solar flux | A index | Active Regions | | | | Outstanding events | Forecasts | | | Alert Situations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Location | No. of Flares | | | | Date | Location | Desc* | |
| | | | | | | Lat-Long | Total | M | X | | | Lat-Long | | |
| 074 | 15 | 14 | 214 | 221 | 033 | S04W90 | 0 | 0 | 0 | | 15 | S04W90 | Q | SOLALERT 15/16 |
| | | | | | | S14W87 | 4 | 0 | 0 | | | S14W87 | Q | MAGALERT MINOR 15/XX |
| | | | | | | N20W68 | 0 | 0 | 0 | | | N20W68 | Q | |
| | | | | | | N25W63 | 0 | 0 | 0 | | | N25W63 | Q | |
| | | | | | | N07W43 | 4 | 1 | 0 | | | N07W43 | E | |
| | | | | | | S15W11 | 0 | 0 | 0 | | | S15W11 | Q | |
| | | | | | | S05E00 | 1 | 0 | 0 | | | S05E00 | E | |
| | | | | | | S21E12 | 0 | 0 | 0 | | | S21E12 | Q | |
| | | | | | | N10E13 | 0 | 0 | 0 | | | N10E13 | Q | |
| | | | | | | N18E36 | 0 | 0 | 0 | | | N18E36 | Q | |
| | | | | | | N09E64 | 1 | 0 | 0 | | | N09E64 | E | |
| 075 | 16 | 15 | 196 | 212 | 018 | N25W76 | 0 | 0 | 0 | | 16 | N25W76 | Q | SOLALERT 16/XX |
| | | | | | | S14W72 | 0 | 0 | 0 | | | S14W72 | Q | MAGNIL |
| | | | | | | N07W57 | 7 | 1 | 0 | | | N07W57 | E | |
| | | | | | | N18W29 | 0 | 0 | 0 | | | N18W29 | Q | |
| | | | | | | S15W25 | 1 | 0 | 0 | | | S15W25 | Q | |
| | | | | | | S05W14 | 1 | 0 | 0 | | | S05W14 | Q | |
| | | | | | | N08W10 | 0 | 0 | 0 | | | N08W10 | Q | |
| | | | | | | S21W00 | 0 | 0 | 0 | | | S21W00 | Q | |
| | | | | | | N18E22 | 0 | 0 | 0 | | | N18E22 | Q | |
| | | | | | | N08E48 | 1 | 0 | 0 | | | N08E48 | Q | |
| | | | | | | N14E68 | 0 | 0 | 0 | | | N14E68 | Q | |
| 076 | 17 | 16 | 192 | 189 | 012 | N25W88 | 0 | 0 | 0 | | 17 | N25W88 | Q | SOLALERT 17 |
| | | | | | | S15W84 | 1 | 0 | 0 | | | S15W84 | Q | MAGQUIET |
| | | | | | | N07W70 | 9 | 0 | 0 | | | N07W70 | E | |
| | | | | | | S16W38 | 0 | 0 | 0 | | | S16W38 | Q | |
| | | | | | | S05W27 | 3 | 0 | 0 | | | S05W27 | Q | |
| | | | | | | N12W16 | 0 | 0 | 0 | | | N12W16 | Q | |
| | | | | | | S21W13 | 4 | 0 | 0 | | | S21W13 | Q | |
| | | | | | | N19E10 | 0 | 0 | 0 | | | N19E10 | Q | |
| | | | | | | N08E38 | 0 | 0 | 0 | | | N08E38 | Q | |
| | | | | | | N15E57 | 0 | 0 | 0 | | | N15E57 | Q | |
| | | | | | | N19E69 | 3 | 0 | 0 | | | N19E69 | Q | |
| 077 | 18 | 17 | 150 | 176 | 014 | N08W82 | 3 | 0 | 0 | | 18 | N08W82 | E | SOLNIL |
| | | | | | | S15W51 | 0 | 0 | 0 | | | S15W51 | Q | MAGQUIET |
| | | | | | | S04W40 | 1 | 0 | 0 | | | S04W40 | Q | |
| | | | | | | N13W30 | 2 | 0 | 0 | | | N13W30 | E | |
| | | | | | | N08E25 | 3 | 0 | 0 | | | N08E25 | Q | |
| | | | | | | S23E33 | 0 | 0 | 0 | | | S23E33 | Q | |
| | | | | | | N14E43 | 0 | 0 | 0 | | | N14E43 | Q | |
| | | | | | | N20E56 | 0 | 0 | 0 | | | N20E56 | E | |
| | | | | | | N11E68 | 0 | 0 | 0 | | | N11E68 | Q | |
| 078 | 19 | 18 | 173 | 174 | 015 | N07W90 | 0 | 0 | 0 | | 19 | N07W90 | Q | SOLQUIET |
| | | | | | | S16W63 | 0 | 0 | 0 | | | S16W63 | Q | MAGQUIET |
| | | | | | | S05W53 | 0 | 0 | 0 | | | S05W53 | Q | |
| | | | | | | N13W43 | 0 | 0 | 0 | | | N13W43 | Q | |
| | | | | | | N08E13 | 6 | 0 | 0 | | | N08E13 | E | |
| | | | | | | S23E20 | 0 | 0 | 0 | | | S23E20 | Q | |
| | | | | | | N14E32 | 0 | 0 | 0 | | | N14E32 | Q | |
| | | | | | | N20E45 | 1 | 0 | 0 | | | N20E45 | E | |
| | | | | | | N11E54 | 1 | 0 | 0 | | | N11E54 | Q | |
| | | | | | | N13E77 | 2 | 0 | 0 | | | N13E77 | Q | |
| 079 | 20 | 19 | 106 | 169 | 012 | N13W57 | 0 | 0 | 0 | | 20 | N13W57 | Q | SOLALERT MINOR 20/21 |
| | | | | | | N08W01 | 0 | 0 | 0 | | | N08W01 | E | MAGQUIET |
| | | | | | | N14E17 | 0 | 0 | 0 | | | N14E17 | Q | |
| | | | | | | N19E31 | 0 | 0 | 0 | | | N19E31 | Q | |
| | | | | | | N10E40 | 1 | 0 | 0 | | | N10E40 | Q | |
| | | | | | | N13E61 | 2 | 0 | 0 | | | N13E61 | E | |
| | | | | | | N17E75 | 0 | 0 | 0 | | | N17E75 | Q | |
| 080 | 21 | 20 | 165 | 177 | 010 | N14W70 | 0 | 0 | 0 | | 21 | N14W70 | Q | SOLNIL |
| | | | | | | N09W15 | 12 | 0 | 0 | | | N09W15 | E | MAGQUIET |
| | | | | | | N14E00 | 0 | 0 | 0 | | | N14E00 | Q | |
| | | | | | | S06E05 | 0 | 0 | 0 | | | S06E05 | Q | |
| | | | | | | N19E18 | 0 | 0 | 0 | | | N19E18 | E | |
| | | | | | | N11E26 | 0 | 0 | 0 | | | N11E26 | Q | |
| | | | | | | N13E49 | 4 | 0 | 0 | | | N13E49 | E | |
| | | | | | | S19E54 | 0 | 0 | 0 | | | S19E54 | Q | |
| | | | | | | N18E63 | 1 | 0 | 0 | | | N18E63 | Q | |
| 081 | 22 | 21 | 216 | 218 | 007 | N13W84 | 1 | 0 | 0 | Presto Tenflare | 22 | N13W84 | Q | SOLALERT 22/24 |
| | | | | | | N09W29 | 11 | 0 | 0 | 21/1611Z 210 Flux | | N09W29 | E | MAGQUIET |
| | | | | | | N14W12 | 2 | 0 | 0 | Units Duration 10 | | N14W12 | Q | |
| | | | | | | S05W08 | 0 | 0 | 0 | Minutes | | S05W08 | Q | |
| | | | | | | N20E04 | 0 | 0 | 0 | | | N20E04 | Q | |
| | | | | | | S07E08 | 0 | 0 | 0 | | | S07E08 | Q | |
| | | | | | | N12W14 | 0 | 0 | 0 | | | N12E14 | Q | |
| | | | | | | N14E37 | 9 | 0 | 0 | | | N14E37 | E | |
| | | | | | | S17E42 | 4 | 0 | 0 | | | S17E42 | Q | |
| | | | | | | S28E49 | 0 | 0 | 0 | | | S28E49 | Q | |
| | | | | | | N18E50 | 1 | 0 | 0 | | | N18E50 | Q | |
| | | | | | | S45E70 | 0 | 0 | 0 | | | S45E70 | Q | |

# ALERT PERIODS

## INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

**MARCH 1981**

SUMMARY OF THE GEOALERT WWA MESSAGES

| Message serial number | Date of issue | Date of observation | Wolf number | 10 cm solar flux | A index | Active Regions: Location Lat-Long | No. of Flares: Total | M | X | Outstanding events | Forecasts: Date | Location Lat-Long | Desc[a] | Alert Situations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 082 | 23 | 22 | 189 | 184 | 007 | N08W42 | 12 | 2 | 0 | Presto Soflare | 23 | N08W42 | A | SOLALERT 23/XX |
| | | | | | | N13W24 | 2 | 0 | 0 | MB/2B 22/2340Z | | N13W24 | Q | MAGQUIET |
| | | | | | | N20W07 | 1 | 0 | 0 | N08W47 Duration | | N20W07 | Q | |
| | | | | | | S07W04 | 0 | 0 | 0 | 26 Minutes. Ten- | | S07W04 | Q | |
| | | | | | | N12W02 | 1 | 0 | 0 | flare 110 Flux | | N12W02 | Q | |
| | | | | | | N16E24 | 11 | 0 | 0 | Units 22/2350Z | | N16E24 | E | |
| | | | | | | S18E28 | 3 | 0 | 0 | Duration 10 Minutes | | S18E28 | Q | |
| | | | | | | N18E36 | 0 | 0 | 0 | | | N18E36 | Q | |
| | | | | | | S28E37 | 3 | 0 | 0 | | | S28E37 | Q | |
| | | | | | | S44E58 | 0 | 0 | 0 | | | S44E58 | Q | |
| | | | | | | N22E68 | 0 | 0 | 0 | | | N22E68 | Q | |
| 083 | 24 | 23 | 192 | 189 | 005 | N08W56 | 11 | 3 | 0 | Presto Boulder | 24 | N08W56 | A | SOLALERT 24/25 |
| | | | | | | N12W34 | 0 | 0 | 0 | 23/1600Z Soflare | | N12W34 | Q | MAGQUIET |
| | | | | | | N20W18 | 0 | 0 | 0 | MB/2B N10W54 23/ | | N20W18 | Q | |
| | | | | | | N12W13 | 1 | 0 | 0 | 0644Z Duration 43 | | N12W13 | Q | |
| | | | | | | N15E11 | 2 | 0 | 0 | Minutes. Tenflare | | N15E11 | E | |
| | | | | | | S18E14 | 4 | 0 | 0 | 23/0653Z 200 Flux | | S18E14 | Q | |
| | | | | | | N20E23 | 1 | 0 | 0 | Units Duration 16 | | N20E23 | Q | |
| | | | | | | S28E23 | 1 | 0 | 0 | Minutes. | | S28E23 | Q | |
| | | | | | | S44E47 | 1 | 0 | 0 | | | S44E47 | Q | |
| | | | | | | N22E59 | 0 | 0 | 0 | | | N22E59 | Q | |
| 084 | 25 | 24 | 187 | 185 | 004 | N08W69 | 12 | 1 | 0 | | 25 | N08W69 | A | SOLALERT 25/25 |
| | | | | | | N19W31 | 0 | 0 | 0 | | | N19W31 | Q | MAGALERT 25 |
| | | | | | | N10W24 | 1 | 0 | 0 | | | N10W24 | Q | |
| | | | | | | N14W03 | 13 | 0 | 0 | | | N14W03 | E | |
| | | | | | | S18W00 | 3 | 0 | 0 | | | S18W00 | Q | |
| | | | | | | N20E10 | 1 | 0 | 0 | | | N20E10 | Q | |
| | | | | | | S27E12 | 0 | 0 | 0 | | | S27E12 | Q | |
| | | | | | | S43E25 | 0 | 0 | 0 | | | S43E25 | Q | |
| | | | | | | N22E47 | 0 | 0 | 0 | | | N22E47 | Q | |
| | | | | | | S13E74 | 0 | 0 | 0 | | | S13E74 | Q | |
| 085 | 26 | 25 | 212 | 200 | 029 | N08W81 | 6 | 1 | 0 | Presto Boulder | 26 | N08W81 | Q | SOLALERT 26/27 |
| | | | | | | N13W60 | 0 | 0 | 0 | 25/2049Z Soflare | | N13W60 | Q | MAGALERT |
| | | | | | | N19W46 | 5 | 0 | 0 | X1/2B N09W89 | | N19W46 | Q | |
| | | | | | | N10W34 | 0 | 0 | 0 | 25/2039Z Duration | | N10W34 | Q | |
| | | | | | | N13W16 | 14 | 0 | 0 | In Progress. | | N13W16 | E | |
| | | | | | | S19W13 | 3 | 0 | 0 | Tenflare 25/2039Z | | S19W13 | E | |
| | | | | | | N18W03 | 0 | 0 | 0 | 220 Flux Units | | N18W03 | Q | |
| | | | | | | S27E00 | 0 | 0 | 0 | Duration In | | S27E00 | Q | |
| | | | | | | S16E12 | 0 | 0 | 0 | Progress. | | S16E12 | Q | |
| | | | | | | N18E15 | 0 | 0 | 0 | | | N18E15 | Q | |
| | | | | | | S43E22 | 1 | 0 | 0 | | | S43E22 | Q | |
| | | | | | | N22E34 | 0 | 0 | 0 | | | N22E34 | Q | |
| | | | | | | S12E62 | 1 | 0 | 0 | | | S12E62 | Q | |
| 086 | 27 | 26 | 216 | 204 | 020 | N08W92 | 0 | 0 | 0 | Presto Boulder | 27 | N08W92 | A | SOLALERT 26/XX |
| | | | | | | N15W75 | 0 | 0 | 0 | 26/1938Z Tenflare | | N15W75 | Q | MAGNIL |
| | | | | | | N20W57 | 1 | 0 | 0 | 310 Flux Units | | N20W57 | Q | |
| | | | | | | N10W48 | 3 | 0 | 0 | Duration 3 Minutes | | N10W48 | Q | |
| | | | | | | N14W30 | 8 | 3 | 0 | | | N14W30 | E | |
| | | | | | | S18W27 | 1 | 0 | 0 | | | S18W27 | Q | |
| | | | | | | N19W16 | 0 | 0 | 0 | | | N19W16 | Q | |
| | | | | | | S28W12 | 0 | 0 | 0 | | | S28W12 | Q | |
| | | | | | | S17W00 | 0 | 0 | 0 | | | S17W00 | Q | |
| | | | | | | S42E10 | 3 | 0 | 0 | | | S42E10 | Q | |
| | | | | | | N21E21 | 0 | 0 | 0 | | | N21E21 | Q | |
| | | | | | | S12E48 | 0 | 0 | 0 | | | S12E48 | Q | |
| | | | | | | S14E64 | 0 | 0 | 0 | | | S14E64 | | |
| 087 | 28 | 27 | 177 | 198 | 012 | N19W68 | 2 | 0 | 0 | | 28 | N19W68 | Q | SOLALERT 28/XX |
| | | | | | | N10W61 | 1 | 0 | 0 | | | N10W61 | Q | MAGQUIET |
| | | | | | | N14W43 | 3 | 0 | 0 | | | N14W43 | E | |
| | | | | | | S18W41 | 0 | 0 | 0 | | | S18W41 | Q | |
| | | | | | | N19W29 | 0 | 0 | 0 | | | N19W29 | Q | |
| | | | | | | S43W02 | 5 | 0 | 0 | | | S43W02 | Q | |
| | | | | | | N21E09 | 0 | 0 | 0 | | | N21E09 | Q | |
| | | | | | | S12E35 | 0 | 0 | 0 | | | S12E35 | Q | |
| | | | | | | S14E49 | 0 | 0 | 0 | | | S14E49 | Q | |
| | | | | | | N18E55 | 0 | 0 | 0 | | | N18E55 | Q | |
| 088 | 29 | 28 | 230 | 202 | 011 | N17W75 | 0 | 0 | 0 | Presto Toyokawa | 29 | N17W75 | Q | SOLALERT 29/XX |
| | | | | | | N10W73 | 1 | 0 | 0 | 28/0413Z Tenflare | | N10W73 | Q | MAGQUIET |
| | | | | | | N14W57 | 1 | 0 | 0 | 110 Flux Units | | N14W57 | A | |
| | | | | | | S19W54 | 5 | 0 | 0 | Duration 7 Minutes | | S19W54 | Q | |
| | | | | | | N17W33 | 0 | 0 | 0 | | | N17W33 | Q | |
| | | | | | | S17W31 | 0 | 0 | 0 | | | S17W31 | Q | |
| | | | | | | S43W13 | 10 | 1 | 0 | | | S43W13 | E | |
| | | | | | | N20W05 | 1 | 0 | 0 | | | N20W05 | Q | |
| | | | | | | S13E22 | 2 | 0 | 0 | | | S13E22 | Q | |
| | | | | | | N15E33 | 0 | 0 | 0 | | | N15E33 | Q | |
| | | | | | | S14E33 | 0 | 0 | 0 | | | S14E33 | Q | |
| | | | | | | N17E47 | 0 | 0 | 0 | | | N17E47 | Q | |
| | | | | | | N25E63 | 1 | 0 | 0 | | | N25E63 | Q | |
| | | | | | | N04E67 | 0 | 0 | 0 | | | N04E67 | Q | |
| | | | | | | S04E74 | 0 | 0 | 0 | | | S04E74 | Q | |

# ALERT PERIODS

## INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

**MARCH 1981**

SUMMARY OF THE GEOALERT WWA MESSAGES

| Message serial number | Date of issue | Date of observation | Wolf number | 10 cm solar flux | A index | Active Regions | | | | Outstanding events | Forecasts | | | Alert Situations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Location Lat-Long | No. of Flares Total | M | X | | Date | Location Lat-Long | Desc* | |
| 089 | 30 | 29 | 243 | 215 | 016 | N14W69 | 5 | 0 | 0 | Presto Sydney | 30 | N14W69 | A | SOLALERT 30/XX |
| | | | | | | N20W54 | 0 | 0 | 0 | 30/0033Z Tenflare | | N20W54 | Q | MAGQUIET |
| | | | | | | S19W66 | 0 | 0 | 0 | Fleurs 424 Flux | | S19W66 | Q | |
| | | | | | | S16W44 | 1 | 0 | 0 | Units Maximum 30/ | | S16W44 | Q | |
| | | | | | | S43W26 | 9 | 0 | 0 | 0022Z. | | S43W26 | E | |
| | | | | | | N21W20 | 2 | 0 | 0 | | | N21W20 | Q | |
| | | | | | | S12E08 | 0 | 0 | 0 | | | S12E08 | Q | |
| | | | | | | N14E20 | 0 | 0 | 0 | | | N14E20 | Q | |
| | | | | | | S14E21 | 0 | 0 | 0 | | | S14E21 | Q | |
| | | | | | | N25E50 | 1 | 0 | 0 | | | N25E50 | Q | |
| | | | | | | N03E54 | 0 | 0 | 0 | | | N03E54 | Q | |
| | | | | | | N14E56 | 1 | 0 | 0 | | | N14E56 | Q | |
| | | | | | | N17E57 | 0 | 0 | 0 | | | N17E57 | Q | |
| | | | | | | N10E63 | 0 | 0 | 0 | | | N10E63 | Q | |
| | | | | | | S04E63 | 0 | 0 | 0 | | | S04E63 | Q | |
| | | | | | | N14E45 | 1 | 0 | 0 | | | N14E45 | Q | |
| 090 | 31 | 30 | 281 | 209 | 013 | N15W85 | 2 | 1 | 0 | Presto Boulder | 31 | N15W85 | E | SOLALERT 31/01 |
| | | | | | | S18W77 | 2 | 0 | 0 | 30/1430Z Proton | | S18W77 | Q | MAGALERT MINOR 31/02 |
| | | | | | | S16W59 | 0 | 0 | 0 | Event Began at 30/ | | S16W59 | Q | |
| | | | | | | S07W58 | 0 | 0 | 0 | 1226Z. 13 Protons | | S07W58 | Q | |
| | | | | | | S42W38 | 13 | 0 | 0 | CM2/SEC/STER at | | S42W38 | E | |
| | | | | | | N21W34 | 3 | 0 | 0 | Greater than 10 | | N21W34 | Q | |
| | | | | | | N19W27 | 0 | 0 | 0 | MEV at 30/1230Z. | | N19W27 | Q | |
| | | | | | | S07W13 | 0 | 0 | 0 | Presto Toyokawa | | S07W13 | Q | |
| | | | | | | S12W08 | 0 | 0 | 0 | 30/0315Z Tenflare | | S12W08 | Q | |
| | | | | | | S22W02 | 0 | 0 | 0 | 340 Flux Units | | S22W02 | Q | |
| | | | | | | N13E06 | 0 | 0 | 0 | 30/0006Z Duration | | N13E06 | Q | |
| | | | | | | S14E08 | 0 | 0 | 0 | 90 Minutes. | | S14E08 | Q | |
| | | | | | | N17E19 | 0 | 0 | 0 | | | N17E19 | Q | |
| | | | | | | N15E32 | 0 | 0 | 0 | | | N15E32 | Q | |
| | | | | | | N25E37 | 1 | 0 | 0 | | | N25E37 | Q | |
| | | | | | | N13E41 | 2 | 0 | 0 | | | N13E41 | Q | |
| | | | | | | N03E42 | 0 | 0 | 0 | | | N03E42 | Q | |
| | | | | | | N09E50 | 1 | 0 | 0 | | | N09E50 | Q | |
| | | | | | | S04E50 | 0 | 0 | 0 | | | S04E50 | Q | |
| | | | | | | N17E77 | 0 | 0 | 0 | | | N17E77 | Q | |
| 091 | 01 | 31 | 207 | 219 | 017 | S16W71 | 0 | 0 | 0 | | 01 | S16W71 | Q | SOLNIL |
| | | | | | | S43W51 | 9 | 0 | 0 | | | S43W51 | E | MAGALERT MINOR 01/02 |
| | | | | | | N21W49 | 3 | 0 | 0 | | | N21W49 | Q | |
| | | | | | | S11W21 | 0 | 0 | 0 | | | S11W21 | Q | |
| | | | | | | N17E03 | 0 | 0 | 0 | | | N17E03 | Q | |
| | | | | | | N17E05 | 0 | 0 | 0 | | | N17E05 | Q | |
| | | | | | | N25E25 | 0 | 0 | 0 | | | N25E25 | Q | |
| | | | | | | N05E28 | 2 | 0 | 0 | | | N05E28 | Q | |
| | | | | | | N14E29 | 3 | 0 | 0 | | | N14E29 | Q | |
| | | | | | | N11E36 | 0 | 0 | 0 | | | N11E36 | Q | |
| | | | | | | S03E36 | 0 | 0 | 0 | | | S03E36 | Q | |
| | | | | | | N18E61 | 0 | 0 | 0 | | | N18E61 | Q | |
| | | | | | | S14E72 | 0 | 0 | 0 | | | S14E72 | Q | |
| | | | | | | N08E80 | 0 | 0 | 0 | | | N08E80 | Q | |

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

# RELATIVE SUNSPOT NUMBERS

## ZURICH, $R_z$

1980 FINAL — *1981 PRELIMINARY

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 153 | 195 | 181 | 168 | 121 | 152 | 101 | 78 | 200 | 151 | 188 | 171 | 147 | 148 | 147 |
| 2 | 150 | 178 | 169 | 145 | 149 | 124 | 108 | 63 | 226 | 135 | 218 | 176 | 141 | 132 | 182 |
| 3 | 148 | 185 | 151 | 133 | 140 | 120 | 97 | 65 | 232 | 139 | 204 | 152 | 122 | 154 | 169 |
| 4 | 160 | 182 | 136 | 123 | 166 | 141 | 83 | 65 | 233 | 121 | 217 | 146 | 113 | 126 | 183 |
| 5 | 184 | 178 | 130 | 154 | 192 | 150 | 96 | 53 | 188 | 96 | 201 | 131 | 94 | 133 | 141 |
| 6 | 207 | 209 | 132 | 179 | 145 | 131 | 98 | 72 | 179 | 116 | 196 | 126 | 71 | 172 | 130 |
| 7 | 212 | 220 | 120 | 194 | 147 | 149 | 97 | 64 | 136 | 135 | 175 | 108 | 89 | 158 | 130 |
| 8 | 221 | 203 | 101 | 199 | 157 | 150 | 87 | 90 | 140 | 173 | 201 | 124 | 115 | 129 | 142 |
| 9 | 249 | 172 | 103 | 229 | 168 | 164 | 84 | 125 | 108 | 186 | 158 | 117 | 126 | 124 | 124 |
| 10 | 219 | 140 | 69 | 214 | 144 | 177 | 86 | 130 | 119 | 235 | 158 | 145 | 120 | 157 | 127 |
| 11 | 245 | 140 | 67 | 245 | 142 | 172 | 87 | 101 | 125 | 260 | 144 | 148 | 123 | 178 | 130 |
| 12 | 210 | 128 | 78 | 251 | 143 | 166 | 98 | 174 | 120 | 256 | 120 | 178 | 126 | 185 | 128 |
| 13 | 181 | 131 | 71 | 252 | 150 | 161 | 105 | 172 | 133 | 213 | 103 | 185 | 123 | 153 | 127 |
| 14 | 178 | 140 | 68 | 203 | 166 | 136 | 128 | 193 | 100 | 232 | 108 | 213 | 106 | 142 | 128 |
| 15 | 146 | 159 | 52 | 182 | 148 | 129 | 161 | 192 | 83 | 224 | 105 | 217 | 106 | 124 | 110 |
| 16 | 166 | 163 | 36 | 154 | 148 | 134 | 198 | 196 | 98 | 202 | 112 | 237 | 81 | 129 | 128 |
| 17 | 145 | 132 | 67 | 126 | 173 | 129 | 211 | 190 | 93 | 158 | 109 | 198 | 72 | 120 | 109 |
| 18 | 130 | 122 | 63 | 127 | 215 | 146 | 241 | 195 | 114 | 142 | 113 | 183 | 79 | 131 | 95 |
| 19 | 110 | 129 | 119 | 134 | 210 | 166 | 220 | 185 | 137 | 137 | 125 | 166 | 78 | 138 | 86 |
| 20 | 115 | 125 | 108 | 164 | 230 | 179 | 227 | 179 | 150 | 167 | 112 | 171 | 88 | 133 | 120 |
| 21 | 121 | 114 | 105 | 143 | 233 | 191 | 229 | 152 | 134 | 155 | 107 | 170 | 105 | 142 | 135 |
| 22 | 123 | 99 | 130 | 122 | 244 | 196 | 201 | 139 | 147 | 164 | 119 | 178 | 99 | 136 | 134 |
| 23 | 124 | 100 | 149 | 95 | 246 | 190 | 184 | 154 | 158 | 140 | 112 | 177 | 115 | 98 | 121 |
| 24 | 120 | 116 | 175 | 112 | 256 | 193 | 155 | 122 | 178 | 127 | 128 | 191 | 120 | 124 | 125 |
| 25 | 107 | 121 | 176 | 133 | 229 | 179 | 151 | 109 | 160 | 110 | 127 | 200 | 115 | 137 | 142 |
| 26 | 127 | 152 | 191 | 159 | 220 | 166 | 138 | 101 | 209 | 119 | 140 | 208 | 120 | 169 | 133 |
| 27 | 120 | 175 | 205 | 150 | 223 | 185 | 117 | 98 | 231 | 134 | 160 | 206 | 115 | 175 | 126 |
| 28 | 130 | 197 | 221 | 149 | 190 | 180 | 127 | 124 | 181 | 136 | 167 | 206 | 142 | 170 | 135 |
| 29 | 122 | 181 | 191 | 145 | 185 | 149 | 110 | 150 | 166 | 173 | 148 | 208 | 165 | | 160 |
| 30 | 145 | | 182 | 130 | 150 | 97 | 100 | 184 | 149 | 184 | 153 | 187 | 174 | | 184 |
| 31 | 164 | | 174 | | 130 | | 81 | 194 | | 170 | | 102 | 159 | | 100 |
| MEAN | 159.6 | 155.0 | 126.2 | 164.1 | 179.9 | 157.3 | 136.3 | 135.4 | 155.0 | 164.7 | 147.9 | 174.4 | 114.4 | 143.5 | 133.0 |

1980 YEARLY MEAN = 154.6

*ZURICH $R_z$ SUNSPOT NUMBER REPLACED BY INTERNATIONAL $R_I$ SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

# DAILY SOLAR FLUX AT 2800 MHz
# OTTAWA ARO

## FLUX ADJUSTED TO 1 A.U., $S_a$

1981

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189.1 | 212.6* | 175.7 | 181.9 | 210.5 | 191.2 | 160.0* | 131.9 | 213.2* | 171.1 | 226.3 | 223.0 | 189.7 | 207.3 | 224.4* |
| 2 | 199.9 | 217.9 | 172.9 | 181.1* | 223.0 | 184.0 | 154.9 | 131.0 | 224.5* | 167.9* | 234.2 | 213.3 | 181.4 | 210.1 | 230.6* |
| 3 | 211.9* | 225.7 | 170.2* | 176.1 | 221.2 | 178.0 | 147.7 | 133.2 | 232.1 | 174.1 | 241.6 | 197.9 | 173.1 | 205.4* | 238.9* |
| 4 | 212.4* | 231.7 | 172.7* | 184.3* | 223.1* | 181.5 | 146.7 | 130.9 | 225.1 | 175.2 | 249.9* | 199.4 | 166.8 | 197.5 | 245.6* |
| 5 | 207.7 | 218.9 | 171.8 | 209.7* | 221.9 | 178.4 | 152.5* | 132.6 | 215.6* | 182.6 | 263.3* | 186.4 | 161.8 | 187.8 | 227.3 |
| 6 | 222.1 | 221.7 | 169.4 | 238.4* | 203.5 | 172.4 | 150.1 | 143.2* | 210.9 | 185.3* | 273.9* | 171.0 | 157.4 | 185.4* | 212.7 |
| 7 | 228.0 | 223.9* | 166.3 | 236.1* | 203.4 | 165.7* | 152.5 | 142.3 | 213.0 | 198.7* | 272.7 | 176.4 | 168.6* | 180.5* | 201.4 |
| 8 | 228.1* | 218.7 | 164.9 | 241.7 | 200.2* | 172.4* | 152.8 | 146.4 | 200.9 | 212.1* | 266.2* | 169.3 | 169.2 | 179.1 | 200.6* |
| 9 | 240.9* | 208.2* | 161.3 | 244.7* | 193.6 | 174.3* | 155.2 | 156.5 | 189.7 | 223.4* | 255.4* | 175.1 | 167.8 | 176.7 | 202.9 |
| 10 | 253.0* | 204.6* | 153.9 | 249.0 | 191.1 | 176.1 | 162.3* | 173.5 | 180.7 | 232.7 | 257.2* | 180.5 | 164.6 | 185.2 | 203.1 |
| 11 | 255.7* | 213.7 | 147.8 | 249.9 | 191.4* | 182.9 | 173.3 | 184.1 | 188.1 | 240.7 | 256.8* | 203.5* | 160.5 | 186.4* | 199.7 |
| 12 | 245.1* | 213.7 | 138.6 | 245.6 | 189.5 | 189.3* | 178.8 | 189.6 | 178.9 | 247.8* | 233.2* | 240.5* | 156.6 | 190.6* | 188.8 |
| 13 | 221.6 | 217.9 | 144.6 | 232.8 | 192.9 | 186.5 | 196.8 | 193.3* | 171.9 | 253.3* | 226.8 | 244.2 | 158.1 | 197.8 | 202.1 |
| 14 | 203.8 | 201.8 | 141.2 | 226.3 | 202.9 | 188.8* | 209.7 | 191.7* | 163.4 | 251.1 | 210.8* | 253.2 | 153.9 | 200.3 | 208.9 |
| 15 | 200.0 | 201.2* | 139.3 | 206.1* | 199.8 | 186.4 | 218.4 | 191.9 | 153.8 | 237.0 | 205.2* | 266.2 | 149.8 | 193.5 | 206.3* |
| 16 | 188.6 | 200.2 | 137.3 | 192.4 | 202.9* | 193.3 | 235.4* | 195.7 | 159.6 | 214.9 | 191.1 | 273.0 | 152.5 | 186.9 | 194.9 |
| 17 | 186.9 | 182.8* | 142.9 | 191.9 | 207.5* | 197.4 | 250.2* | 197.7* | 158.0 | 201.1 | 181.6* | 254.8 | 155.3 | 188.1* | 181.5 |
| 18 | 177.5 | 180.0* | 147.4 | 201.6 | 214.3* | 207.6 | 249.8* | 204.3* | 154.4 | 200.6 | 174.9 | 255.1 | 161.0 | 190.2* | 180.0 |
| 19 | 164.4 | 177.3 | 162.3 | 214.5* | 234.2 | 219.8* | 255.2* | 201.4 | 160.1* | 203.3 | 172.4 | 238.5 | 165.4 | 178.8 | 175.1 |
| 20 | 156.5 | 174.7 | 162.1 | 215.8 | 244.7* | 227.9* | 258.0 | 193.0 | 167.5 | 200.5 | 161.6 | 235.9* | 159.9* | 188.3 | 182.7 |
| 21 | 153.4 | 169.6 | 162.4 | 207.7 | 252.6 | 228.0 | 254.0 | 194.1 | 159.6 | 204.2 | 161.8 | 224.8 | 156.6 | 189.9* | 189.5 |
| 22 | 150.2* | 167.3 | 162.5 | 199.2 | 276.6 | 250.0* | 248.7 | 178.3* | 178.6 | 205.3* | 171.4 | 231.2 | 156.4 | 199.5 | 189.4* |
| 23 | 166.7 | 160.1 | 172.4* | 186.2 | 289.5 | 251.5 | 235.1 | 174.1 | 180.7* | 196.1 | 167.2 | 226.0 | 156.8 | 217.9* | 188.0* |
| 24 | 171.1* | 157.2* | 172.4 | 186.3 | 290.2 | 245.9* | 222.2 | 164.3* | 191.3 | 192.5 | 174.9* | 223.6 | 157.3 | 231.5* | 191.4 |
| 25 | 171.3* | 165.7 | 182.5* | 185.9 | 292.8 | 238.8* | 206.4 | 153.8* | 183.8 | 182.9 | 176.4* | 220.7 | 169.2* | 233.8 | 199.3 |
| 26 | 178.8* | 169.8 | 185.2 | 186.6 | 284.2 | 226.3 | 197.4 | 154.6 | 184.3 | 180.3* | 189.6 | 220.1 | 174.6 | 238.5 | 198.6* |
| 27 | 198.6* | 173.2 | 195.3* | 200.6A | 281.2* | 212.6 | 188.4 | 159.3 | 183.2* | 177.2 | 185.3 | 220.3 | 175.8* | 235.4 | 197.6 |
| 28 | 194.8 | 171.7* | 203.5 | 203.7 | 280.8* | 199.7* | 169.5 | 168.3 | 185.2 | 178.2* | 191.4 | 231.5* | 197.2* | 224.9* | 203.7* |
| 29 | 197.8 | 176.7* | 199.9 | 203.5* | 252.3 | 188.8 | 155.3 | 178.5 | 178.2* | 186.4 | 206.1* | 217.2 | 204.2 | | 212.4* |
| 30 | 197.9 | | 194.3* | 200.9 | 222.7 | 183.4 | 143.3 | 191.4* | 174.1 | 201.8 | 216.3 | 209.9 | 209.1 | | 208.2 |
| 31 | 213.9* | | 187.2* | | 200.6 | | 136.5 | 198.7* | | 211.5 | | 199.0 | 209.1 | | 214.0* |
| MEAN | 199.6 | 195.1 | 166.5 | 209.3 | 229.1 | 199.3 | 190.8 | 170.3 | 185.9 | 202.9 | 213.4 | 218.8 | 169.8 | 199.5 | 203.2 |

* adjusted for burst
A = interpolated data point

# DAILY SOLAR INDICES

MARCH 1981

| DAY OF MONTH | YEAR DAY | BARTELS 27-DAY CYCLE NUMBER | PROVISIONAL SUNSPOT NUMBERS | | OBSERVED FLUX | SOLAR FLUX ADJUSTED TO 1 A.U. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $R_I$ | $R_{A'}$ | OTTAWA 2800 | AFGL 15400 | AFGL 8800 | AFGL 4995 | OTTAWA 2800 | AFGL 2695 | AFGL 1415 | AFGL 606 | AFGL 410 | AFGL 245 |
| 1 | 60 | 12 | 147 | 191 | 228.5* | | | | 224.4* | | | | | |
| 2 | 61 | 13 | 182 | 197 | 234.6* | 624 | 384 | 241 | 230.6* | 236 | 172 | 118 | 40 | 34 |
| 3 | 62 | 14 | 169 | 170 | 243.0* | 627 | 404 | 242 | 238.9* | 234 | 167 | 120 | 38 | 34 |
| 4 | 63 | 15 | 183 | 173 | 249.6* | 629 | 388 | 249 | 245.6* | 241 | 167 | 115 | 43 | 24 |
| 5 | 64 | 16 | 141 | 172 | 231.0 | 620 | 401 | 224 | 227.3 | 216 | 158 | 124 | 38 | 23 |
| 6 | 65 | 17 | 138 | 145 | 215.9 | 605 | 396 | 213 | 212.7 | 206 | 155 | 117 | 36 | 25 |
| 7 | 66 | 18 | 130 | 130 | 204.5 | 571 | 365 | 195 | 201.4 | 192 | 151 | 111 | 36 | 21 |
| 8 | 67 | 19 | 142 | 160 | 203.4* | 607 | 370 | 206 | 200.6* | 193 | 148 | 116 | 43 | 19 |
| 9 | 68 | 20 | 124 | 158 | 205.8 | 609 | 369 | 210 | 202.9 | 193 | 144 | 128 | 43 | 20 |
| 10 | 69 | 21 | 127 | 162 | 205.8 | 610 | | | 203.1 | | | 119 | 40 | 22 |
| 11 | 70 | 22 | 130 | 150 | 202.3 | 586 | 363 | 203 | 199.7 | 195 | 152 | 111 | 37 | 18 |
| 12 | 71 | 23 | 128 | 132 | 191.1 | 609 | 347 | 196 | 188.8 | 191 | 148 | 113 | 38 | 20 |
| 13 | 72 | 24 | 127 | 150 | 204.6 | 604 | 340 | 210 | 202.1 | 208 | 143 | 90 | 36 | 32 |
| 14 | 73 | 25 | 128 | 147 | 211.2 | 620 | 383 | 214 | 208.9 | 206 | 152 | 125 | 42 | 27 |
| 15 | 74 | 26 | 110 | 138 | 208.6* | 617 | 374 | 228 | 206.3* | 202 | 143 | 123 | 35 | 20 |
| 16 | 75 | 27 | 128 | 133 | 196.9 | 599 | 347 | 209 | 194.9 | 188 | 140 | 118 | 35 | 20 |
| 17 | 76 | 1 | 109 | 136 | 183.3 | 605 | | | 181.5 | | | 100 | 35 | 15 |
| 18 | 77 | 2 | 95 | 85 | 181.6 | 605 | | | 180.0 | | | 117 | 33 | 19 |
| 19 | 78 | 3 | 86 | 102 | 176.5 | 598 | 335 | 181 | 175.1 | 168 | 132 | 98 | 30 | 28 |
| 20 | 79 | 4 | 120 | 136 | 184.2 | 581 | 352 | 195 | 182.7 | 170 | 134 | 96 | 38 | 46 |
| 21 | 80 | 5 | 135 | 146 | 190.8 | 604 | 351 | 201 | 189.5 | 176 | 136 | 119 | 44 | 79 |
| 22 | 81 | 6 | 134 | 165 | 190.7* | 612 | 368 | 209 | 189.4* | 187 | 144 | 131 | 51 | 64 |
| 23 | 82 | 7 | 121 | 156 | 189.1* | | | | 188.0* | | | | | |
| 24 | 83 | 8 | 125 | 148 | 192.6 | 605 | 363 | 203 | 191.4 | 181 | 135 | 109 | 37 | 26 |
| 25 | 84 | 9 | 142 | 146 | 200.3 | 546 | 362 | 213 | 199.3 | 189 | 146 | 112 | 39 | 30 |
| 26 | 85 | 10 | 133 | 145 | 199.4* | 606 | 358 | 223 | 198.6* | 190 | 144 | 121 | 36 | 21 |
| 27 | 86 | 11 | 126 | 154 | 198.4 | 577 | 271 | 188 | 197.6 | 185 | 151 | 111 | 35 | 24 |
| 28 | 87 | 12 | 135 | 163 | 204.3* | 620 | 373 | 225 | 203.7* | 197 | 149 | 106 | 35 | 21 |
| 29 | 88 | 13 | 160 | 181 | 213.0* | | | | 212.4* | | | | | |
| 30 | 89 | 14 | 184 | 173 | 208.6 | | | | 208.2 | | | | | |
| 31 | 90 | 15 | 108 | 160 | 214.4* | 589 | | | 214.0* | | | 97 | 36 | 18 |
| MEAN | | | 133.8 | 151.7 | 205.3 | 603 | 364 | 212 | 203.2 | 198 | 148 | 114 | 38 | 28 |

*ADJUSTED FOR BURST.

NOTE: DATA GAPS IN AFGL SAGAMORE HILL DATA ARE DUE TO EQUIPMENT PROBLEMS.

# OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

| | SUNSPOT NUMBERS | | | | | | 2800 MHz FLUX adjusted to 1 AU | |
|---|---|---|---|---|---|---|---|---|
| | Rz or $R_I$ | | Ra | | Rs | | Sa | |
| Date | Monthly Mean | Smoothed | Monthly Mean | Smoothed | Monthly Mean | Smoothed | Monthly Mean | Smoothed |
| Apr 78 | 99.7 | 77 | 97.5 | 72 | 100.5 | 79 | 150.5 | 130 |
| May | 82.7 | 83 | 79.6 | 78 | 99.7 | 84 | 149.7 | 135 |
| Jun | 95.1 | 89 | 88.0 | 84 | 96.5 | 90 | 146.8 | 141 |
| Jul | 70.4 | 97 | 58.1 | 92 | 84.2 | 97 | 135.2 | 147 |
| Aug | 58.1 | 104 | 48.1 | 98 | 64.3 | 104 | 116.9 | 153 |
| Sep | 138.2 | 108 | 128.1 | 103 | 110.4 | 108 | 159.6 | 158 |
| Oct | 125.1 | 111 | 116.0 | 105 | 107.7 | 111 | 157.1 | 160 |
| Nov | 97.9 | 113 | 92.8 | 107 | 98.1 | 113 | 148.2 | 162 |
| Dec | 122.7 | 118 | 121.0 | 111 | 121.6 | 116 | 170.0 | 165 |
| Jan 79 | 166.6 | 124 | 164.4 | 116 | 150.2 | 119 | 196.5 | 168 |
| Feb | 137.5 | 131 | 136.8 | 123 | 153.0 | 124 | 199.1 | 172 |
| Mar | 138.0 | 136 | 132.5 | 128 | 136.7 | 128 | 184.0 | 176 |
| Apr | 101.5 | 141 | 95.8 | 133 | 127.0 | 133 | 175.0 | 180 |
| May | 134.4 | 147 | 121.8 | 139 | 120.4 | 139 | 168.9 | 186 |
| Jun | 149.5 | 153 | 136.4 | 144 | 138.9 | 144 | 186.0 | 191 |
| Jul | 159.4 | 155 | 140.5 | 145 | 123.1 | 145 | 171.4 | 192 |
| Aug | 142.2 | 155 | 125.1 | 144 | 129.2 | 145 | 177.0 | 192 |
| Sep | 188.4 | 156 | 184.0 | 143 | 156.5 | 144 | 202.3 | 191 |
| Oct | 186.2 | 158 | 178.2 | 144 | 171.7 | 145 | 216.4 | 192 |
| Nov | 183.3 | 162 | 176.5 | 149 | 182.9 | 149 | 226.8 | 196 |
| Dec | 176.3 | 164 | 157.6 | 152 | 151.0 | 152 | 197.2 | 199 |
| Jan 80 | 159.6 | 164 | 145.3 | 153 | 153.6 | 154 | 199.6 | 200 |
| Feb | 155.0 | 163 | 133.9 | 154 | 148.7 | 155 | 195.1 | 200 |
| Mar | 126.2 | 161 | 107.9 | 153 | 117.8 | 153 | 166.5 | 200 |
| Apr | 164.1 | 159 | 138.5 | 151 | 164.0 | 152 | 209.3 | 198 |
| May | 179.7 | 156 | 172.3 | 149 | 185.4 | 151 | 229.1 | 197 |
| Jun | 157.3 | 155 | 153.6 | 149 | 153.2 | 151 | 199.3 | 198 |
| Jul | 136.3 | 153* | 136.0 | 144 | 144.1 | 151 | 190.8 | 197 |
| Aug | 135.4 | 150* | 133.0 | 144 | 121.9 | 150 | 170.3 | 196 |
| Sep | 155.0 | 150* | 150.0 | 143 | 138.8 | 152 | 185.9 | 198 |
| Oct | 164.7 | 150(+ 3)* | 160.8 | 142 | 157.1 | 152 | 202.9 | --- |
| Nov | 147.9 | 149(+ 6)* | 149.9 | 142 | 168.5 | 151 | 213.4 | --- |
| Dec | 174.4 | 149(+12)* | 167.5 | 141 | 174.3 | 150 | 218.8 | --- |
| Jan 81 | 114.4† | 149(+17)* | 115.4 | 141 | 120.5 | 151 | 169.0 | --- |
| Feb | 143.5† | 148(+19)* | 143.7 | 140 | 153.5 | 150 | 199.5 | --- |
| Mar | 133.8† | 145(+18)* | --- | 138 | 157.5 | 147 | 203.2 | --- |
| Apr | --- | 141(+20)* | --- | 134 | --- | 143 | --- | --- |
| May | --- | 139(+22)* | --- | 132 | --- | 140 | --- | --- |
| Jun | --- | 136(+23)* | --- | 130 | --- | 138 | --- | --- |
| Jul | --- | 134(+24)* | --- | 128 | --- | 136 | --- | --- |
| Aug | --- | 133(+24)* | --- | 127 | --- | 134 | --- | --- |
| Sep | --- | 132(+24)* | --- | 126 | --- | 133 | --- | --- |

*An asterisk denotes either a value of the observed 12-month running mean or the predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers ($R_Z$ and $R_I$). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for $R_A$'. All tabulated entries of Ra are final values.

†$R_I$ replaces $R_Z$ as of January 1981.

## SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
## CYCLE 21

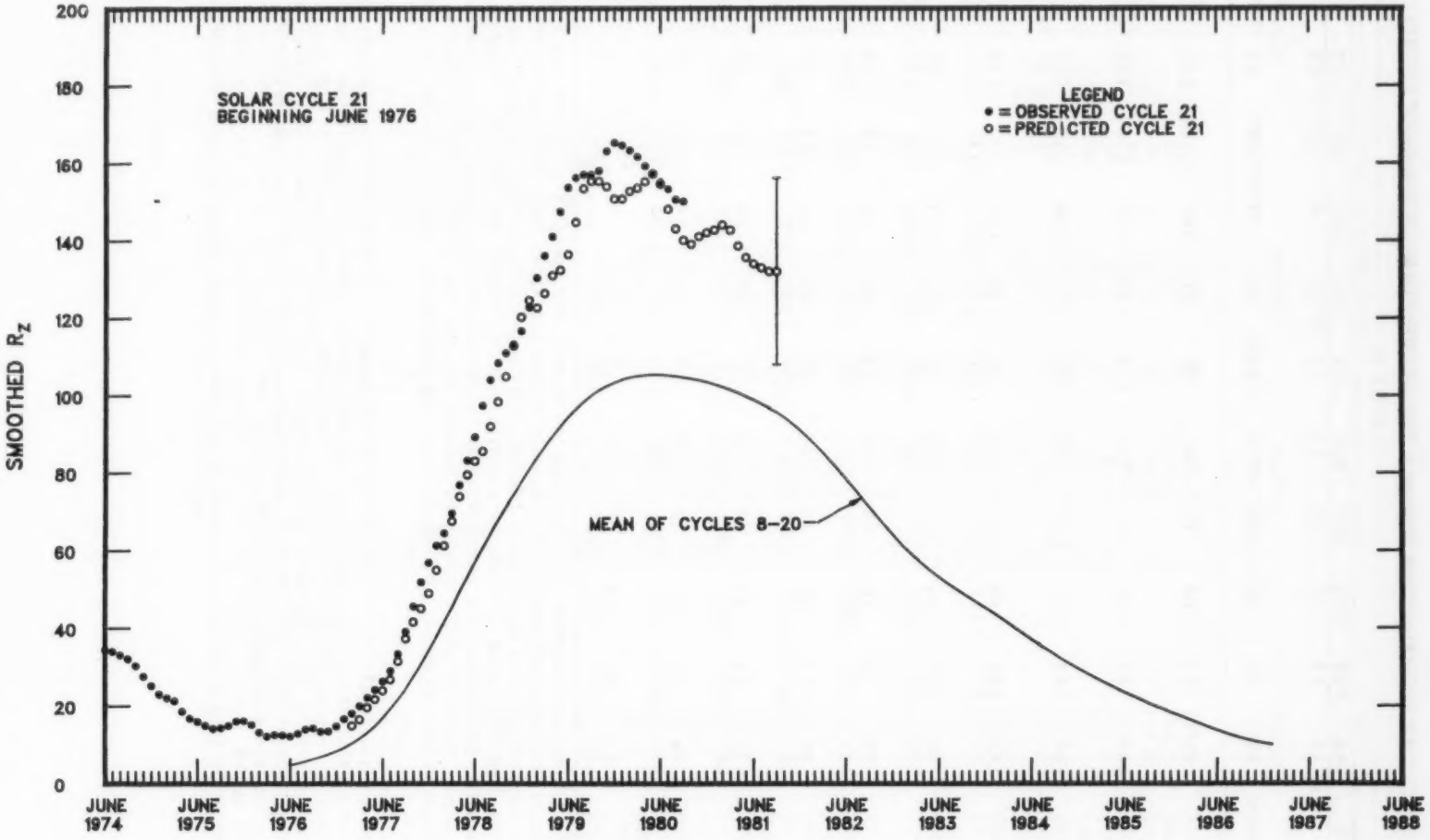
| MONTH | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 15 | 13 | 12 | 13 | 13 | 12 | 13 | 14 | 14 | 13 | 14 | 15 |
| 1977 | 17 | 18 | 20 | 22 | 24 | 26 | 29 | 33 | 39 | 46 | 52 | 57 |
| 1978 | 61 | 65 | 70 | 77 | 83 | 89 | 97 | 104 | 108 | 111 | 113 | 118 |
| 1979 | 124 | 131 | 137 | 141 | 147 | 153 | 155 | 155 | 156 | 158 | 162 | 165* |
| 1980 | 164 | 163 | 161 | 159 | 156 | 155 | 153 | 150 | 150 | 150 | 149 | 149 |
| | | | | | | | | | | ( 3) | ( 6) | (12) |
| 1981 | 149 | 148 | 145 | 141 | 139 | 136 | 134 | 133 | 132 | 131 | 127 | 124 |
| | (17) | (19) | (18) | (20) | (22) | (23) | (24) | (24) | (24) | (24) | (25) | (24) |
| 1982 | 120 | 117 | 114 | 112 | 109 | 106 | 102 | 97 | 92 | 87 | 83 | 80 |
| | (22) | (21) | (20) | (19) | (18) | (18) | (16) | (15) | (15) | (13) | (12) | (13) |
| 1983 | 75 | 72 | 70 | 68 | 65 | 63 | 61 | 60 | 58 | 58 | 57 | 57 |
| | (14) | (15) | (16) | (18) | (19) | (20) | (21) | (23) | (25) | (26) | (27) | (27) |
| 1984 | 55 | 53 | 50 | 47 | 45 | 45 | 44 | 42 | 41 | 39 | 38 | 36 |
| | (28) | (27) | (27) | (27) | (28) | (29) | (30) | (30) | (29) | (28) | (27) | (26) |
| 1985 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 |
| | (26) | (25) | (25) | (25) | (24) | (23) | (22) | (21) | (21) | (22) | (23) | (23) |
| 1986 | 24 | 23 | 22 | 20 | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 13 |
| | (23) | (23) | (23) | (22) | (21) | (21) | (20) | (19) | (17) | (16) | (15) | (13) |
| 1987 | 13 | 14 | 14 | 15 | 16 | 17 | 18 | | | | | |
| | (12) | (12) | (11) | (12) | (13) | (14) | (15) | | | | | |

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1980 and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1981 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

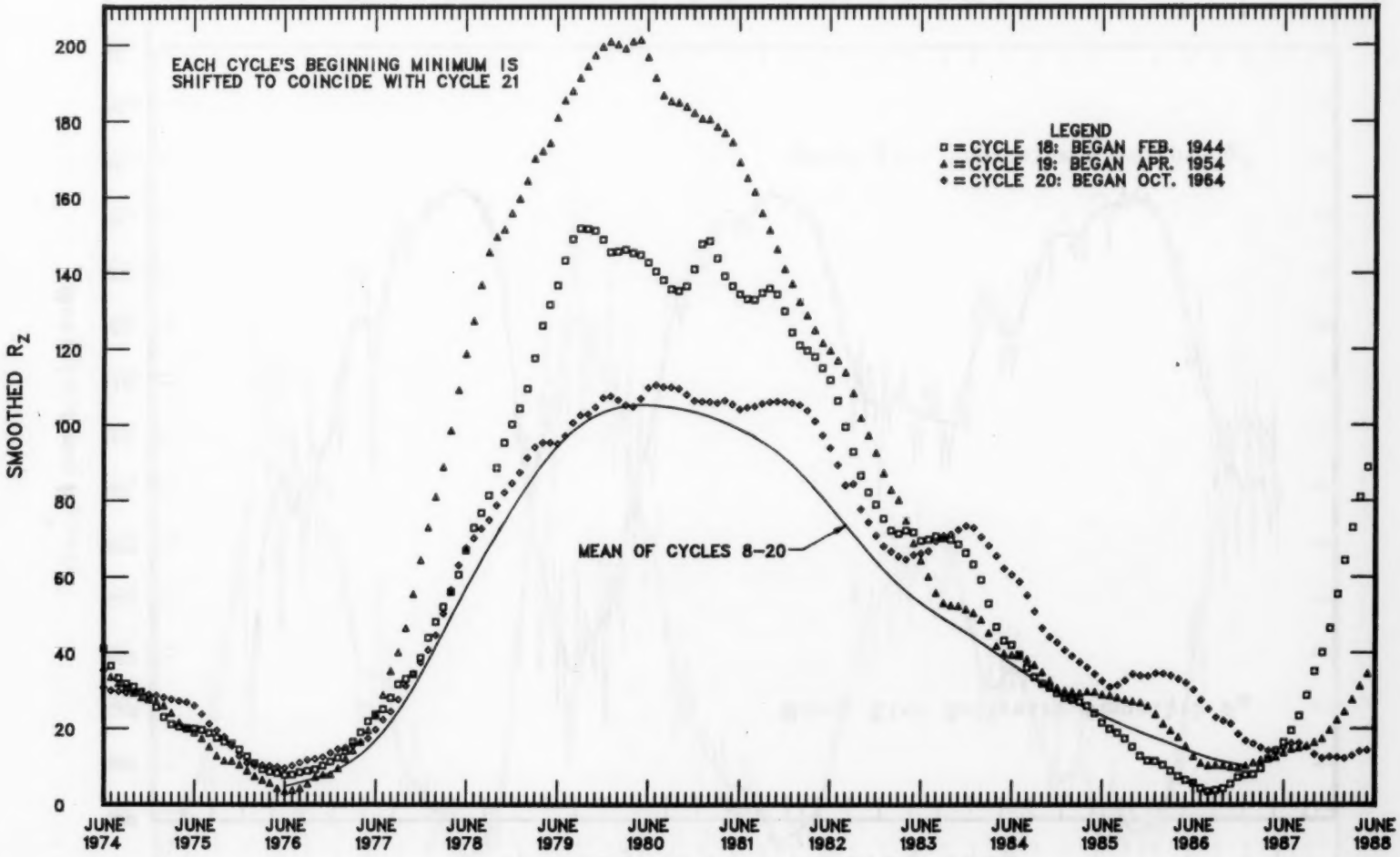
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

# OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS

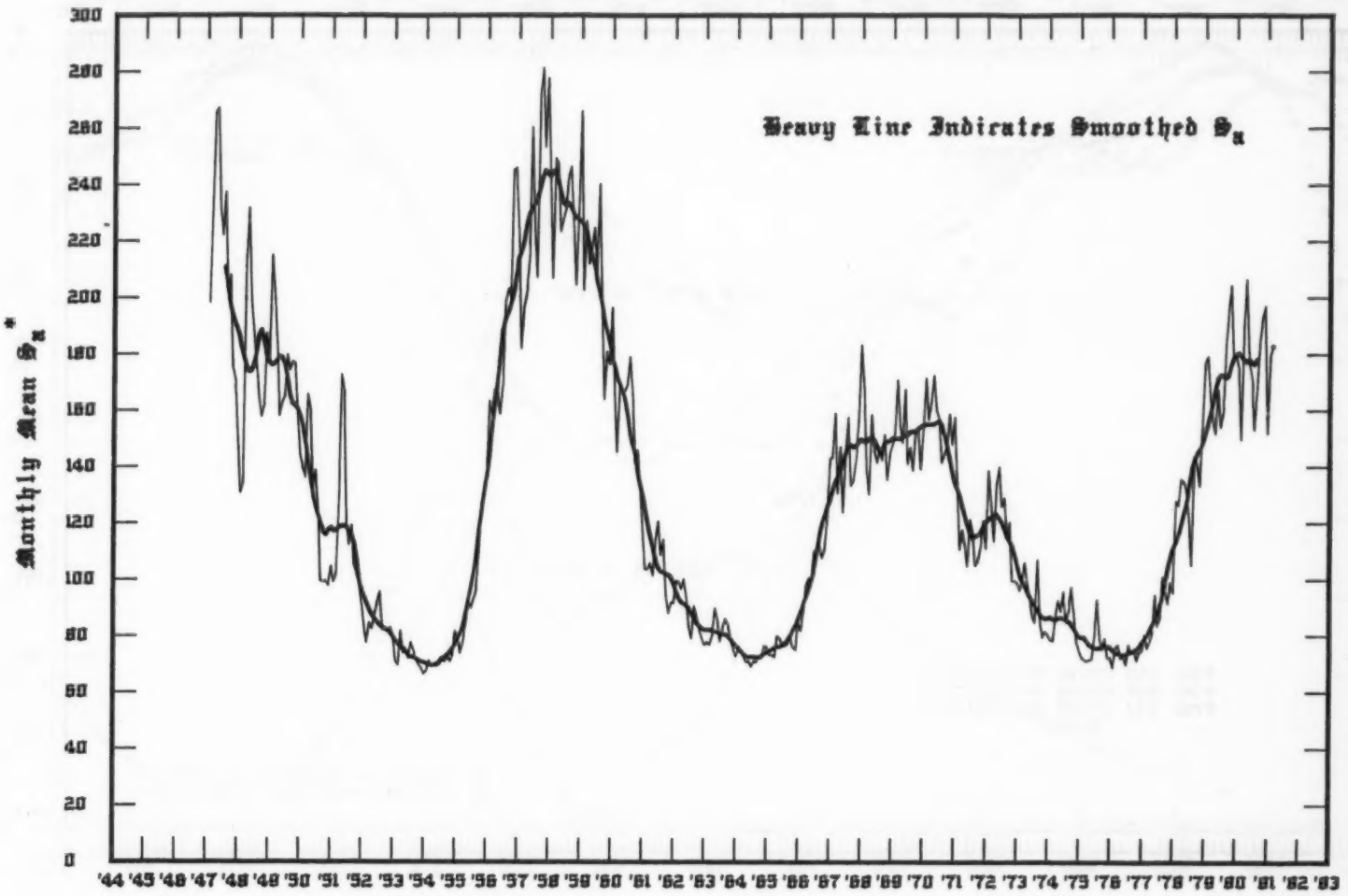


# SUPERPOSITION OF CYCLES 18, 19, AND 20




15 Mar 81

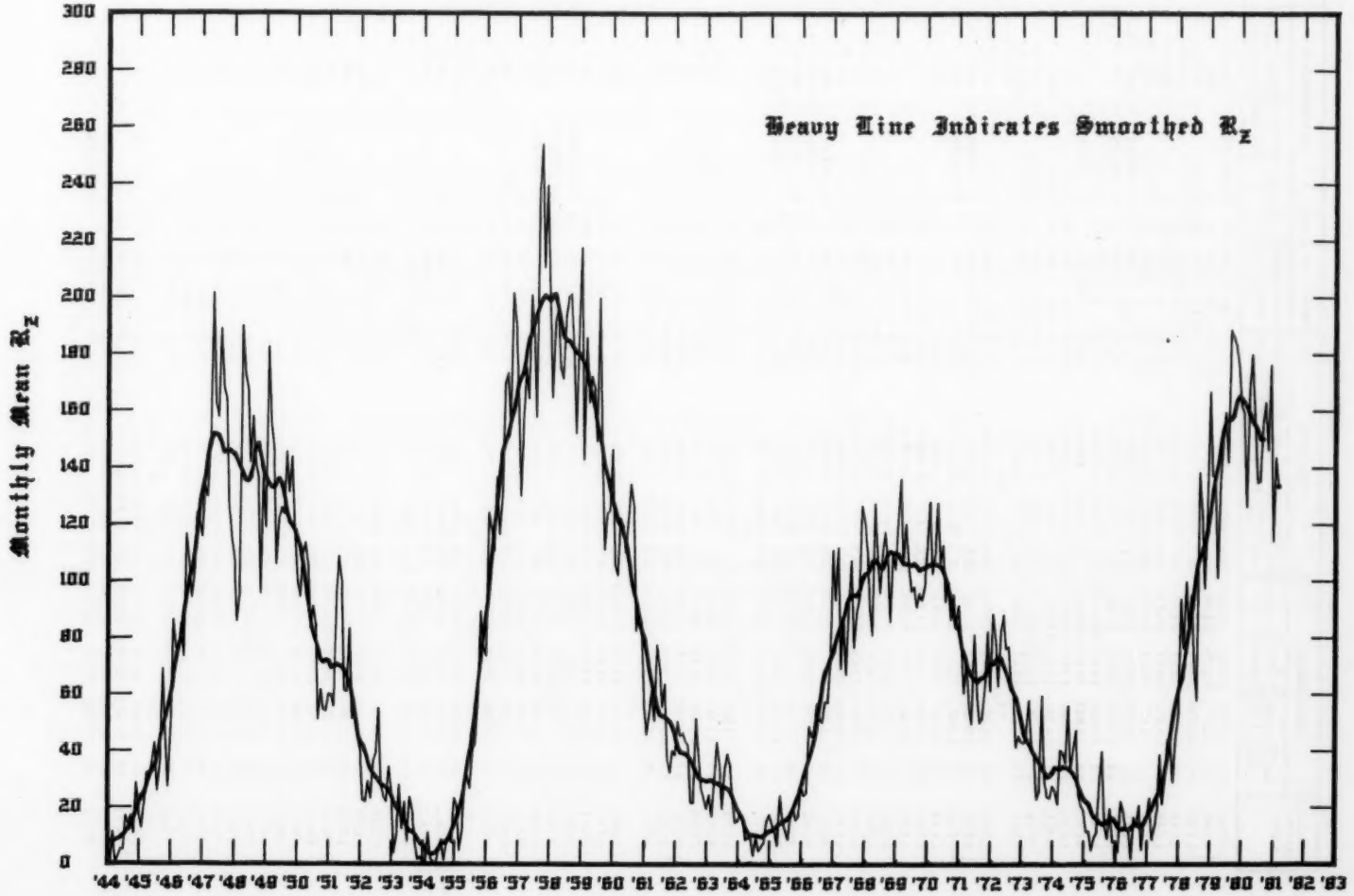
# Monthly Mean Ottawa 10.7 cm Solar Radio Flux
## February 1947 – March 1981




* Solar Flux Units ($10^{-22}$ W/m$^2$ Hz) Adjusted to 1 A.U., Series B.

* Solar Flux Units ($10^{-22}$ W/m$^2$ Hz) Adjusted to 1 A.U., Series D.

## Monthly Mean Zürich Sunspot Numbers
## January 1944 – March 1981




17
Mar 81

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION — MIN. | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | | | CONF. | TYPE | TIME — UT | MEAS. AREA MIL. of Disk | CORR. AREA Sq. Deg. | |
| PEKG | 01 | 0058 | 0103 | 0123 | S16 | W04 | .155 | | 31.7 | 25 | SN | | C | 0104 | 76 | .8 | EF |
| LEAR | 01 | 0100 | 0105 | 0116 | N15 | W02 | .187 | | 31.3 | 16 | SF | 3 | C | | 31 | | |
| LEAR | 01 | 0108 | 0104 | 0112 | S17 | W04 | .371 | | 31.7 | 12 | SN | 3 | C | | 75 | | |
| LEAR | 01 | 0115 | 0117 | 0133 | S11 | E21 | .438 | | 2.6 | 18 | SF | 3 | C | | 45 | | |
| LEAR | 01 | 0426 | 0427 | 0435 | S14 | W02 | .317 | | 1.0 | 9 | SF | 3 | C | | 29 | | |
| LEAR | 01 | 0442 | 0443 | 0450 | S18 | W04 | .387 | | 31.9 | 9 | SF | 3 | C | | 68 | | |
| PEKG | 01 | 0515 | 0518 | 0530 | S17 | W03 | .368 | | 1.0 | 15 | SN | | C | 0518 | 147 | 1.5 | D |
| PEKG | 01 | 0525 | 0530 | 0534 | S13 | E45 | .743 | | 4.6 | 9 | SF | | C | 0530 | 13 | .2 | D |
| LEAR | 01 | 0544 | 0545 | 0548 | N33 | E80 | .984 | | 7.2 | 4 | SF | 3 | C | | | | |
| PEKG | 01 | 0553E | 0601 | 0610D | S13 | E44 | .732 | | 4.5 | 17D | SF | | C | 0605 | 17 | .3 | D |
| LEAR | 01 | 0944 | 0945 | 0950 | N17 | W07 | .248 | | 31.3 | 6 | SF | 3 | C | | 28 | | |
| HOLL | 01 | 1438 | 1444 | 1601 | S14 | E41 | .703 | | 4.7 | 83 | SN | 3 | C | | 158 | | |
| HOLL | 01 | 1636 | 1646 | 1657 | S15 | E42 | .718 | | 4.8 | 21 | SF | 3 | C | | 23 | | |
| HOLL | 01 | 2222 | 2227 | 2303 | S16 | E35 | .645 | | 4.6 | 41 | SN | 3 | C | | 126 | | |
| LEAR | 02 | 0047 | 0051 | 0053 | S18 | E12 | .427 | | 2.3 | 12 | SF | 3 | C | | 47 | | |
| PEKG | 02 | 0047 | 0053 | 0110 | S16 | W22 | .436 | | 31.4 | 23 | SF | | C | 0055 | 42 | .4 | D |
| PEKG | 02 | 0047 | 0053 | 0101 | S17 | E11 | .405 | | 2.9 | 14 | SN | | C | 0055 | 29 | .5 | D |
| LEAR | 02 | 0052 | 0052 | 0056 | S17 | W22 | .506 | | 31.4 | 4 | SF | 3 | C | | 38 | | |
| LEAR | 02 | 0120 | 0123 | 0132 | N20 | W45 | .725 | | 29.7 | 12 | SF | 3 | C | | 27 | | |
| LEAR | 02 | 0244 | 0247 | 0250 | S04 | E83 | 1.000 | | 8.8 | 6 | SN | 3 | C | | | | |
| LEAR | 02 | 0302 | 0302 | 0315 | N16 | W15 | .323 | | 1.0 | 13 | SF | 3 | C | | 26 | | |
| LEAR | 02 | 0451 | 0452 | 0503 | S17 | E09 | .392 | | 2.9 | 9 | SN | 3 | C | | 43 | | |
| LEAR | 02 | 0508 | 0508 | 0522 | S14 | W25 | .512 | | 31.3 | 14 | SN | 3 | C | | 57 | | |
| LEAR | 02 | 0946E | 0947 | 0958 | S18 | W28 | .581 | | 31.3 | 12D | SF | 3 | C | | 28 | | |
| WEND | 02 | 1135E | | 1143 | S05 | E73 | .383 | | 8.4 | 14D | SN | | C | 1141 | 44 | | |
| WEND | 02 | 1210 | 1236 | 1251 | S16 | W27 | .553 | | 31.5 | 41 | SN | | C | 1236 | 125 | 1.5 | Z |
| WEND | 02 | 1211 | | 1251D | S05 | E78 | .980 | | 8.4 | 40D | SN | | C | 1213 | 50 | | |
| WEND | 02 | 1230 | 1241 | 1251D | S09 | W28 | .514 | | 31.4 | 21D | SN | | C | 1241 | 138 | 1.6 | |
| BOUL | 02 | 2112 | 2120 | 2142 | S17 | W34 | .648 | | 31.3 | 30 | 1N | 4 | C | | 230 | | |
| LEAR | 03 | 0159 | 0218 | 0242D | S05 | E74 | .964 | | 8.6 | 43D | SN | 3 | C | | | | |
| PEKG | 03 | 0334E | 0336 | 0347 | N21 | W54 | .819 | | 30.1 | 13D | SN | | P | 0347 | 21 | .4 | E |
| PEKG | 03 | 0645 | 0650 | 0655 | S14 | W05 | .323 | | 2.9 | 10 | SN | | P | 0653 | 50 | .5 | E |
| HOLL | 03 | 2215 | 2242 | 2353 | N21 | W67 | .921 | | 29.9 | 38 | SN | 2 | C | | 85 | | |
| SIGB | 03 | 2240 | 2243 | 2250 | N21 | W68 | .927 | | 29.8 | 10 | SB | 1 | C | 2243 | 60 | | |
| HOLL | 03 | 2322 | 2331 | 0011D | S06 | E59 | .864 | | 8.4 | 49D | SN | 2 | C | | 118 | | |
| MANI | 04 | 0119 | 0119 | 0124D | N26 | E85 | .994 | | 10.4 | 6D | SN | 3 | C | | 50 | | |
| LEAR | 04 | 0127 | 0128 | 0137D | N06 | E56 | .827 | | 8.3 | 10D | SF | 3 | C | | 51 | | |
| MANI | 04 | 0129 | 0129U | 0135D | N10 | E58 | .846 | | 8.4 | 7D | SF | 3 | C | | 20 | | |
| PEKG | 04 | 0155 | 0210 | 0235 | N21 | W67 | .921 | | 30.1 | 40 | SN | | P | 0210 | 42 | | EJ |
| PEKG | 04 | 0737E | 0737 | 0754 | S03 | E68 | .869 | | 8.8 | 17D | SN | | P | 0737 | 13 | .2 | D |
| PEKG | 04 | 0802E | 0804E | 0820 | N23 | W72 | .950 | | 29.3 | 19D | SN | | P | 0806 | 38 | | D |
| HOLL | 04 | 1543E | 1543U | 1623 | S13 | W23 | .552 | | 2.5 | 40D | SF | 2 | C | | 28 | | |
| HOLL | 04 | 1640 | 1715 | 1832D | N38 | W22 | .378 | | 3.0 | 112D | SN | 3 | C | | 48 | | |
| HOLL | 04 | 1934 | 1939 | 1953 | S09 | W51 | .793 | | 1.0 | 19 | SN | 3 | C | | 137 | | |
| HOLL | 04 | 2005 | 2005 | 2008 | S06 | E43 | .766 | | 8.5 | 3 | SF | 3 | C | | 27 | | |
| HOLL | 04 | 2106 | 2106 | 2114 | S16 | W59 | .880 | | 31.5 | 8 | SN | 3 | C | | 59 | | |
| HOLL | 04 | 2238 | 2238 | 2247 | S12 | W32 | .583 | | 2.5 | 9 | SF | 3 | C | | 39 | | |
| HOLL | 04 | 2309 | 2310 | 2343 | S11 | W31 | .564 | | 2.6 | 34 | SF | 3 | C | | 42 | | |
| LEAR | 05 | 0030 | 0031 | 0038D | S03 | W53 | .813 | | 1.0 | 8D | SF | 3 | C | | 63 | | |
| LEAR | 05 | 0115 | 0120 | 0136 | S04 | E47 | .739 | | 8.6 | 18 | SF | 3 | C | | 26 | | |
| LEAR | 05 | 0137 | 0140 | 0149 | N12 | E60 | .865 | | 9.6 | 12 | SF | 3 | C | | 30 | | |
| PEKG | 05 | 0425E | 0430 | 0435D | S17 | W63 | .911 | | 31.5 | 10D | SN | | P | 0430 | 46 | 1.0 | D |
| PEKG | 05 | 0435 | 0449 | 0510D | S12 | W30 | .557 | | 2.3 | 35D | SN | | C | 0451 | 59 | .7 | D |
| PEKG | 05 | 0703 | 0716 | 0750 | S05 | E45 | .717 | | 8.7 | 41 | SB | | C | 0715 | 50 | .7 | E |
| PEKG | 05 | 0716 | 0731 | 0753D | S04 | E43 | .691 | | 8.5 | 37D | SF | | C | 0731 | 59 | .8 | EF |
| MANI | 05 | 0718E | 0719U | 0723D | S04 | E50 | .773 | | 9.1 | 5D | SN | 3 | C | | 80 | | |
| MANI | 05 | 0803E | 0805U | 0901 | S04 | E50 | .773 | | 9.1 | 58D | SN | 3 | C | | 70 | | |
| PALE | 05 | 1736E | 1736U | 1800 | N10 | E50 | .765 | | 9.5 | 24D | SN | 3 | C | | 58 | | D |
| PALE | 05 | 2031 | 2035 | 2105D | N03 | E18 | .309 | | 7.2 | 34D | SF | 3 | C | | 79 | | D |
| BOUL | 05 | 2105E | 2128 | 2143D | N04 | E18 | .308 | | 7.2 | 38D | 2N | 4 | C | | 370 | | |
| PALE | 05 | 2127E | 2128U | 2245D | S00 | E27 | .458 | | 7.9 | 78D | SF | 3 | C | | 83 | | |
| PALE | 05 | 2130E | 2130U | 2230D | N03 | E15 | .259 | | 7.0 | 60D | SN | 3 | C | | 151 | | |
| PEKG | 06 | 0244 | 0247 | 0330 | S17 | W75 | .974 | | 31.5 | 46 | SN | | P | 0246 | 29 | | EZ |
| MANI | 06 | 0247E | 0247U | 0250D | S19 | W78 | .985 | | 31.3 | 3D | SF | 2 | C | | 50 | | |
| PEKG | 06 | 0646D | 0656 | 0704D | N04 | E13 | .224 | | 7.3 | 18D | SB | | P | 0656 | 38 | .4 | D |
| PEKG | 06 | 0656E | 0656 | 0656D | N08 | E80 | .383 | | 12.3 | | SN | | P | 0656 | 29 | | D |

# Hα SOLAR FLARES

MARCH 1981

| OBSERVATORY | OBSERVED UT | | | | LOCATION | | | | | DURATION | IMPORTANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| PALE | 06 | 1813E | 1814U | 1822 | S04 | E22 | .396 | | 8.4 | 120 | SF | 3 | C | | 21 | | |
| LEAR | 07 | 0053 | 0054 | 0057 | N09 | W07 | .151 | | 6.5 | 4 | SF | 3 | C | | 27 | | |
| LEAR | 07 | 0159E | 0153U | 0205 | N11 | E32 | .538 | | 9.5 | 60 | SF | 3 | C | | 81 | | |
| LEAR | 07 | 0613E | 0630 | 0714 | S22 | W79 | .988 | | 1.3 | 610 | SN | 3 | C | | | | |
| LEAR | 07 | 0623 | 0627 | 0658 | N08 | E66 | .912 | | 12.2 | 35 | SN | 3 | C | | 37 | | |
| LEAR | 07 | 0722 | 0727 | 0741 | N08 | E11 | .203 | | 8.1 | 19 | SF | 3 | C | | 101 | | |
| LEAR | 07 | 1013 | 1020 | 1024 | S15 | W68 | .333 | | 2.3 | 11 | SN | 3 | C | | 32 | | |
| WEND | 07 | 1016 | 1019 | 1025 | S13 | W68 | .337 | | 2.3 | 9 | SF | | C | 1019 | 31 | | |
| WEND | 07 | 1049 | 1051 | 1057 | N05 | W08 | .140 | | 6.9 | 8 | SF | | C | 1051 | 25 | .3 | |
| WEND | 07 | 1208 | 1215 | 1227 | N03 | W04 | .071 | | 7.2 | 19 | SF | | C | 1215 | 44 | .5 | |
| WEND | 07 | 1349 | 1351 | 1404 | S14 | W42 | .711 | | 4.4 | 15 | SF | | C | 1351 | 31 | .4 | |
| WEND | 07 | 1410 | 1423 | 1438 | S13 | W40 | .683 | | 4.6 | 28 | SF | | C | 1423 | 50 | .7 | E |
| MANI | 07 | 2248 | 2251 | 2257 | N04 | W13 | .224 | | 7.0 | 9 | SB | 3 | C | | 70 | | |
| PALE | 07 | 2248E | 2255U | 2302 | N02 | W17 | .294 | | 6.7 | 140 | SN | 3 | C | | 37 | | |
| HOLL | 07 | 2255 | 2256 | 2303 | N02 | W16 | .277 | | 6.8 | 8 | SB | 3 | C | | 67 | | |
| HOLL | 07 | 2255 | 2311 | 2333 | N07 | E55 | .817 | | 12.1 | 37 | SF | 3 | C | | 36 | | |
| LEAR | 07 | 2310 | 2310 | 2325 | N07 | E55 | .817 | | 12.1 | 15 | SF | 3 | C | | 18 | | |
| PALE | 08 | 0110 | 0115 | 0141 | S14 | W46 | .754 | | 4.6 | 31 | SN | 3 | C | | 84 | | D |
| LEAR | 08 | 0111 | 0114 | 0145 | S14 | W48 | .775 | | 4.4 | 34 | SN | 3 | C | | 279 | | |
| PALE | 08 | 0147 | 0209 | 0307D | N10 | E53 | .738 | | 12.0 | 800 | SF | 3 | C | | 262 | | D |
| LEAR | 08 | 0157 | 0203 | 0252 | N03 | E56 | .828 | | 12.3 | 55 | SF | 3 | C | | 206 | | D |
| MANI | 08 | 0207 | 0209 | 0216D | N11 | E57 | .838 | | 12.4 | 30 | SF | 3 | C | | 115 | | |
| PALE | 08 | 0223E | 0223U | 0305 | N20 | E55 | .823 | | 12.2 | 420 | SF | 3 | C | | 29 | | |
| LEAR | 08 | 0334 | 0337 | 0344 | N06 | E53 | .797 | | 12.1 | 10 | SN | 3 | C | | 90 | | |
| LEAR | 08 | 0517 | 0526 | 0531 | N07 | E52 | .786 | | 12.1 | 14 | SF | 3 | C | | 17 | | |
| PEKG | 08 | 0520D | 0528 | 0540 | N08 | E53 | .797 | | 12.2 | 200 | SN | | P | 0527 | 29 | .5 | E |
| LEAR | 08 | 0636 | 0638 | 0648 | N27 | E16 | .463 | | 9.5 | 12 | SF | 3 | C | | 21 | | |
| LEAR | 08 | 0741 | 0746 | 0810 | N22 | E22 | .472 | | 10.0 | 29 | 1N | 3 | C | | 195 | | |
| MANI | 08 | 0753E | 0754U | 0756D | N22 | E24 | .494 | | 10.1 | 30 | SN | 3 | C | | 90 | | |
| PEKG | 08 | 0756E | 0756 | 0825 | N23 | E26 | .526 | | 10.3 | 290 | SN | | P | 0756 | 88 | 1.2 | E |
| LEAR | 08 | 0803 | 0808 | 0825 | S08 | E84 | .996 | | 14.6 | 22 | SF | 3 | C | | | | |
| LEAR | 08 | 0826 | 0828 | 0840 | N05 | E43 | .753 | | 12.0 | 14 | SF | 3 | C | | 28 | | |
| HOLL | 08 | 1625 | 1629 | 1712 | N05 | E45 | .705 | | 12.1 | 47 | SF | 3 | C | | 58 | | |
| HOLL | 08 | 1715 | 1720 | 1742 | N26 | E10 | .412 | | 9.5 | 27 | SF | 3 | C | | 56 | | |
| BIGB | 08 | 1716 | 1721 | 1746 | N29 | E10 | .455 | | 9.5 | 30 | SF | 3 | C | 1721 | 50 | .5 | |
| HOLL | 08 | 1824 | 1301 | 1315 | N05 | E44 | .693 | | 12.1 | 51 | SB | 3 | C | | 104 | | |
| PALE | 08 | 1853 | 1853 | 1936 | N08 | E43 | .682 | | 12.0 | 43 | SN | 3 | C | | 94 | | D |
| PALE | 08 | 2003 | 2003 | 2009 | N08 | E44 | .694 | | 12.1 | 6 | SN | 3 | C | | 21 | | |
| HOLL | 08 | 2107 | 2121 | 2304 | N04 | E37 | .601 | | 11.7 | 117 | SB | 3 | C | | 73 | | |
| PALE | 08 | 2121E | 2122U | 2130 | N06 | E37 | .601 | | 11.7 | 30 | SN | 3 | C | | 56 | | |
| HOLL | 08 | 2233 | 2239 | 2316 | S06 | W05 | .183 | | 8.6 | 43 | SN | 3 | C | | 115 | | |
| PALE | 08 | 2234E | 2240U | 2319 | S05 | W05 | .174 | | 8.6 | 450 | SF | 3 | C | | 36 | | D |
| HOLL | 09 | 0005 | 0014 | 0032D | N04 | E35 | .572 | | 11.6 | 270 | SN | 3 | C | | 79 | | |
| PALE | 09 | 0025 | 0026U | 0042 | N07 | E40 | .642 | | 12.0 | 17 | SF | 3 | C | | 36 | | |
| PEKG | 09 | 0040E | 0120 | 0144D | N08 | E42 | .663 | | 12.2 | 640 | SN | | P | 0120 | 17 | .2 | D |
| PEKG | 09 | 0040E | 0040 | 0040D | N08 | E41 | .656 | | 12.1 | | SN | | P | 0040 | 38 | .5 | EK |
| LEAR | 09 | 0145 | 0153 | 0157 | N07 | E41 | .656 | | 12.1 | 12 | SN | 3 | C | | 24 | | |
| PALE | 09 | 0251E | 0315U | 0350D | N08 | E38 | .616 | | 12.0 | 590 | SF | 3 | C | | 124 | | |
| PEKG | 09 | 0304 | 0310 | 0320 | S06 | E82 | .331 | | 15.3 | 16 | SN | | P | 0310 | 25 | | D |
| LEAR | 09 | 0310 | 0310 | 0315 | S07 | E80 | .985 | | 15.1 | 5 | SF | 3 | C | | | | |
| LEAR | 09 | 0612 | 0614 | 0625 | N07 | E33 | .545 | | 11.7 | 13 | SB | 3 | C | | 41 | | |
| MANI | 09 | 0844E | 0845 | 0850D | N09 | E36 | .590 | | 12.1 | 60 | SF | 2 | C | | 40 | | |
| WEND | 09 | 1422 | 1431 | 1502 | S06 | W12 | .264 | | 8.7 | 40 | SF | | C | 1431 | 75 | .8 | |
| WEND | 09 | 1433 | 1443 | 1547 | N07 | E34 | .560 | | 12.2 | 68 | SF | | C | 1443 | 131 | 1.6 | E |
| PALE | 09 | 1808E | 1814U | 1824D | N09 | E31 | .519 | | 12.1 | 160 | SF | 3 | C | | 22 | | |
| HOLL | 09 | 1810 | 1814 | 1819 | N09 | E31 | .519 | | 12.1 | 9 | SF | 3 | C | | 24 | | |
| PALE | 09 | 1835 | 1853 | 2014D | N10 | E31 | .521 | | 12.1 | 990 | 1N | 3 | C | | 275 | | D |
| HOLL | 09 | 1840 | 1853 | 2052 | N13 | E28 | .488 | | 11.9 | 132 | 1B | 3 | C | | 453 | | |
| BIGB | 09 | 1841 | 1856 | 2055 | N10 | E33 | .550 | | 12.3 | 134 | SB | 2 | C | 1856 | 120 | 1.5 | |
| PALE | 09 | 1854E | 1908U | 1955D | N15 | E28 | .498 | | 11.9 | 610 | SN | 3 | C | | 120 | | |
| PALE | 09 | 2158 | 2200U | 2209 | N09 | E24 | .414 | | 11.7 | 11 | SN | 3 | C | | 91 | | |
| BIGB | 09 | 2158 | 2159 | 2209 | N09 | E24 | .414 | | 11.7 | 11 | SN | 2 | C | 2159 | 90 | 1.0 | |
| HOLL | 09 | 2309 | 2326 | 0002 | N07 | E45 | .706 | | 13.3 | 53 | SN | 3 | C | | 43 | | |
| LEAR | 10 | 0243 | 0248U | 0257 | N06 | E28 | .470 | | 12.2 | 14 | SN | 3 | C | | 52 | | |
| PALE | 10 | 0324 | 0327 | 0342 | N10 | E26 | .448 | | 12.1 | 18 | SF | 3 | C | | 24 | | |
| LEAR | 10 | 0345 | 0351 | 0413 | S04 | W24 | .424 | | 8.4 | 28 | SF | 3 | C | | 67 | | |
| PALE | 10 | 0350 | 0352 | 0403D | S03 | W24 | .420 | | 8.4 | 130 | SF | 3 | C | | 54 | | D |
| PALE | 10 | 0355 | 0359 | 0403D | N08 | E25 | .427 | | 12.0 | 80 | SF | 3 | C | | 54 | | |

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION | IM POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| PEKG | 10 | 0621 | 0622 | 0633 | S02 | W31 | .522 | | 7.3 | 12 | SN | | C | 0622 | 25 | .3 | E |
| PEKG | 10 | 0621E | 0621 | 0625 | N08 | E26 | .442 | | 12.2 | 4D | SN | | P | 0621 | 21 | .2 | D |
| LEAR | 10 | 0622 | 0622 | 0636 | N06 | E26 | .439 | | 12.2 | 14 | SN | 3 | C | | 33 | | |
| LEAR | 10 | 0623 | 0625 | 0630 | S03 | W31 | .525 | | 7.9 | 7 | SF | 3 | C | | 36 | | |
| PEKG | 10 | 0828 | 0832 | 0842 | N07 | E24 | .409 | | 12.2 | 14 | SN | | P | 0832 | 101 | 1.2 | E |
| LEAR | 10 | 0833 | 0834 | 0848 | N06 | E24 | .408 | | 12.2 | 15 | SB | 3 | C | | 75 | | D |
| ATHN | 10 | 0834E | 0837 | 0853 | N05 | E28 | .469 | | 12.5 | 19D | SB | 3 | C | | 64 | | D |
| MANI | 10 | 0834E | 0835U | 0838D | N07 | E24 | .439 | | 12.2 | 4D | SN | 3 | C | | 50 | | |
| ATHN | 10 | 1016E | 1021 | 1037 | N23 | W04 | .341 | | 10.1 | 21D | SB | 3 | C | | 64 | | D |
| BIGB | 10 | 1818 | 1844 | 1929 | N10 | E71 | .944 | | 16.1 | 71 | SN | 3 | C | 1844 | 60 | 1.3 | |
| BIGB | 10 | 2138 | 2141 | 2152 | S03 | E34 | .568 | | 13.5 | 14 | SF | 3 | C | 2141 | 50 | .6 | |
| BIGB | 10 | 2330 | 2333 | 2353 | N03 | W54 | .838 | | 6.9 | 23 | SF | 3 | C | 2333 | 60 | .6 | |
| LEAR | 11 | 0012 | 0013 | 0024 | S07 | W39 | .646 | | 8.1 | 12 | SF | 3 | C | | 26 | | |
| LEAR | 11 | 0018 | 0019 | 0037 | N12 | E66 | .912 | | 16.0 | 19 | SF | 3 | C | | 37 | | |
| LEAR | 11 | 0114 | 0114 | 0136 | S02 | W42 | .673 | | 7.3 | 22 | SN | 3 | C | | 45 | | |
| LEAR | 11 | 0245 | 0257 | 0305 | N04 | E09 | .157 | | 11.8 | 23 | SN | 3 | C | | 88 | | |
| LEAR | 11 | 0324 | 0326 | 0338 | N05 | E14 | .243 | | 12.2 | 14 | SN | 3 | C | | 53 | | |
| LEAR | 11 | 0333 | 0334 | 0339 | N25 | W11 | .409 | | 10.3 | 6 | SF | 3 | C | | 34 | | |
| LEAR | 11 | 0739 | 0733 | 0744 | S05 | W41 | .666 | | 8.2 | 5 | SF | 3 | C | | 21 | | |
| LEAR | 11 | 0945 | 1003 | 10100 | N29 | W21 | .537 | | 9.8 | 25D | 1F | 2 | C | | 198 | | |
| ATHN | 11 | 1005E | 1008U | 1015 | N28 | W18 | .501 | | 10.1 | 10D | SB | 4 | C | | 95 | | |
| BIGB | 11 | 1707 | 1708 | 1723 | N05 | E02 | .045 | | 11.9 | 16 | SN | 3 | C | 1708 | 80 | .8 | |
| HOLL | 11 | 1707 | 1708 | 17530 | N05 | E01 | .034 | | 11.8 | 46D | SB | 3 | C | | 81 | | |
| HOLL | 11 | 1721 | 1740 | 1826D | S05 | E46 | .728 | | 15.2 | 65D | SN | 3 | C | | 129 | | |
| BIGB | 11 | 1723 | 1741 | 1836 | S35 | E46 | .728 | | 15.2 | 73 | SN | 3 | C | 1741 | 70 | 1.0 | |
| PALE | 11 | 1726E | 1744U | 1812 | S02 | E44 | .698 | | 15.0 | 46D | SN | 3 | C | | 146 | | D |
| HOLL | 11 | 1750 | 1753 | 1803 | S06 | W50 | .775 | | 8.0 | 13 | SN | 3 | C | | 73 | | |
| BIGB | 11 | 1750 | 1753 | 1808 | S06 | W50 | .775 | | 8.0 | 18 | SB | 3 | C | 1753 | 100 | 1.6 | |
| PALE | 11 | 1752E | 1754U | 1802 | S07 | W49 | .765 | | 8.1 | 10D | SF | 3 | C | | 41 | | D |
| HOLL | 11 | 1813 | 1813 | 1818 | N35 | E30 | .029 | | 11.8 | 5 | SF | 3 | C | | 33 | | |
| HOLL | 11 | 1845 | 1848 | 1902 | S05 | E44 | .704 | | 15.1 | 16 | SF | 3 | C | | 41 | | |
| HOLL | 11 | 1340 | 1340 | 1346 | N05 | E00 | .023 | | 11.8 | 6 | SF | 3 | C | | 32 | | |
| BIGB | 11 | 2102 | 2103 | 2138 | N15 | W30 | .527 | | 9.6 | 36 | SN | 3 | C | 2103 | 90 | 1.1 | |
| PEKG | 12 | 0123 | 0136 | 0152 | S04 | E40 | .651 | | 15.1 | 32 | SN | | C | 0137 | 105 | 1.4 | E |
| LEAR | 12 | 0135 | 0135 | 0152 | S04 | E41 | .664 | | 15.1 | 17 | SN | 3 | C | | 38 | | |
| PEKG | 12 | 0137 | 0144 | 0146 | N06 | W01 | .052 | | 12.0 | 3 | SN | | C | 0144 | 50 | .5 | D |
| PEKG | 12 | 0300 | 0306 | 0336 | S03 | E41 | .662 | | 15.2 | 36 | SB | | C | 0306 | 92 | 1.3 | E |
| PEKG | 12 | 0333 | 0336 | 0346 | N29 | W31 | .631 | | 9.8 | 46 | SB | | C | 0336 | 55 | .8 | E |
| LEAR | 12 | 0304 | 0305 | 0319 | N23 | W28 | .553 | | 10.0 | 15 | SF | 3 | C | | 25 | | |
| LEAR | 12 | 0304 | 0307 | 0318 | S05 | E37 | .614 | | 14.3 | 14 | SN | 3 | C | | 45 | | |
| LEAR | 12 | 0408 | 0403 | 0412 | S04 | E37 | .611 | | 14.9 | 4 | SF | 3 | C | | 22 | | |
| PEKG | 12 | 0646E | 0652 | 0658 | N04 | W08 | .140 | | 11.7 | 12D | SN | | C | 0652 | 25 | .3 | E |
| PALE | 12 | 1747 | 1753 | 1839 | N12 | W08 | .205 | | 12.1 | 52 | 1N | 3 | C | | 427 | | |
| HOLL | 12 | 1750E | 1756 | 1847 | N12 | W09 | .217 | | 12.1 | 57D | 1N | 3 | C | | 252 | | |
| BIGB | 12 | 1751 | 1757 | 1833 | N13 | W08 | .218 | | 12.1 | 48 | SN | 2 | C | 1757 | 160 | 1.7 | |
| PALE | 12 | 1923E | 1925U | 19340 | S02. | E31 | .521 | | 15.1 | 11D | SN | 3 | C | | 32 | | |
| HOLL | 12 | 1925 | 1927 | 1935 | S04 | E31 | .527 | | 15.1 | 13 | SF | 3 | C | | 21 | | |
| HOLL | 12 | 2011 | 2017 | 2027 | S22 | E42 | .745 | | 16.0 | 16 | SF | 3 | C | | 22 | | |
| LEAR | 13 | 0023 | 0028 | 0037 | S04 | E26 | .453 | | 15.0 | 14 | SF | 3 | C | | 27 | | |
| ISTA | 13 | 0650 | | 0713 | N07 | E52 | .787 | | 17.2 | 23 | SN | | | | | | U |
| LEAR | 13 | 0825 | 0826 | 0839 | S14 | W65 | .916 | | 8.5 | 14 | SF | 3 | C | | 36 | | |
| LEAR | 13 | 0931 | 0934 | 1010 | S05 | E22 | .398 | | 15.0 | 39 | 1B | 3 | C | | 284 | | D |
| ATHN | 13 | 0940E | 0946U | 1005 | S10 | E25 | .472 | | 15.3 | 25D | SN | 2 | C | | 127 | | |
| HOLL | 13 | 1545 | 1548 | 1556 | N08 | W21 | .366 | | 12.1 | 11 | SF | 3 | C | | 22 | | |
| BIGB | 13 | 1558E | 1617 | 1743U | S14 | W75 | .971 | | 8.0 | 132U | 1N | 2 | C | 1617 | 180 | | |
| HOLL | 13 | 1652 | 1656 | 1701 | N08 | W24 | .413 | | 11.9 | 9 | SN | 3 | C | | 25 | | |
| HOLL | 13 | 1810 | 1836 | 1857 | N08 | W24 | .413 | | 12.0 | 47 | SB | 3 | C | | 120 | | D |
| HOLL | 13 | 1332 | 1338 | 1350 | N03 | W24 | .416 | | 12.0 | 18 | SB | 3 | C | | 88 | | D |
| PALE | 13 | 1356 | 1358 | 2126 | S12 | W73 | .962 | | 8.4 | 90 | SN | 3 | C | | | | |
| HOLL | 13 | 2029 | 2033 | 2034 | S36 | E17 | .330 | | 15.1 | 5 | SF | 3 | C | | 48 | | |
| HOLL | 13 | 2039 | 2101 | 2137 | N12 | W25 | .443 | | 12.0 | 58 | 1B | 3 | C | | 439 | | D |
| PALE | 13 | 2043 | 2100 | 2133 | N12 | W26 | .458 | | 11.9 | 56 | 2B | 3 | C | | 450 | | D |
| PALE | 13 | 2056 | 2058 | 2126 | S12 | W73 | .962 | | 8.4 | 30 | SN | 3 | C | | | | |
| HOLL | 13 | 2107 | 2139 | 21390 | S13 | W78 | .981 | | 8.0 | 2D | 1F | 3 | C | | | | |
| HOLL | 13 | 2107 | 2116 | 2256 | S08 | W83 | .994 | | 7.7 | 109 | 1N | 3 | C | | | | |
| PALE | 13 | 2135E | 2222 | 23200 | S14 | W73 | .963 | | 8.4 | 105D | SF | 3 | C | | | | |
| HOLL | 13 | 2236 | 2236 | 2307 | N10 | W27 | .464 | | 11.9 | 31 | SB | 3 | C | | 52 | | D |
| HOLL | 13 | 2311 | 2312 | 23140 | N09 | W26 | .445 | | 12.0 | 3D | 1B | 3 | C | | 238 | | |
| MANI | 13 | 2315E | 2317U | 23230 | N07 | W28 | .472 | | 11.9 | 5D | 1N | 3 | C | | 210 | | |

# Hα SOLAR FLARES

MARCH 1981

| OBSERVATORY | OBSERVED UT | | | | LOCATION | | | | | DURATION — MIN. | IMPORTANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | | | CONF. | TYPE | TIME — UT | MEAS. AREA Mill. of Disk | CORR. AREA Sq. Deg. | |
| PALE | 13 | 2316E | 2319U | 2354D | N09 | W26 | .446 | | 12.0 | 38D | 1B | 3 | C | | 243 | | D |
| LEAR | 13 | 2328E | 2335U | 2352D | S10 | W84 | .936 | | 7.7 | 24D | SN | 3 | C | | | | |
| LEAR | 13 | 2330E | 2330 | 2335D | N07 | W28 | .472 | | 11.9 | 5D | 1B | 3 | C | | 333 | | D |
| HOLL | 13 | 2343 | 2343 | 2354 | N23 | W50 | .791 | | 10.2 | 11 | SF | 3 | C | | 16 | | |
| LEAR | 14 | 0154E | 0220U | 0233 | S13 | W80 | .988 | | 8.1 | 45D | SN | 3 | C | | | | |
| LEAR | 14 | 0202E | 0203U | 0234 | N10 | W89 | 1.000 | | 7.4 | 32D | SN | 3 | C | | | | |
| PEKG | 14 | 0311 | 0320 | 0324D | S11 | W79 | .984 | | 8.2 | 13D | SF | | P | 0320 | 97 | | E |
| PEKG | 14 | 0312 | 0319 | 0322D | N09 | W31 | .521 | | 11.8 | 10D | SN | | P | 0319 | 71 | .9 | E |
| MANI | 14 | 0319E | 0319U | 0322D | N14 | W75 | .965 | | 8.5 | 3D | SN | 3 | C | | 15 | | |
| HOLL | 14 | 1625 | 1623 | 1652 | S12 | W32 | 1.001 | | 7.8 | 27 | SF | 3 | C | | | | |
| BIGB | 14 | 1628 | 1630 | 1652 | S10 | E90 | 1.000 | | 21.4 | 24 | 1N | 3 | C | 1632 | 70 | | |
| HOLL | 14 | 1712 | 1713 | 1743 | S12 | W92 | 1.001 | | 7.8 | 31 | SN | 3 | C | | | | |
| BIGB | 14 | 1712 | 1713 | 1748 | S14 | E90 | 1.000 | | 21.5 | 36 | 1N | 3 | C | 1713 | 60 | | |
| PALE | 14 | 1753 | 1805 | 1820 | N03 | W34 | .564 | | 12.2 | 21 | SN | 2 | C | | 36 | | |
| HOLL | 14 | 1803 | 1805 | 1817 | N03 | W37 | .605 | | 12.0 | 14 | SF | 3 | C | | 41 | | |
| PALE | 14 | 1832 | 1845 | 1856 | N09 | W35 | .578 | | 12.1 | 24 | SF | 2 | C | | 68 | | |
| HOLL | 14 | 1907 | 1914 | 1919 | S12 | W91 | 1.000 | | 8.0 | 12 | SF | 3 | C | | | | |
| BIGB | 14 | 1910 | 1915 | 1919 | S13 | E90 | 1.000 | | 21.5 | 9 | 1N | 3 | C | 1915 | 80 | | |
| BIGB | 14 | 2228 | 2231 | 2252 | S15 | E90 | 1.000 | | 21.7 | 24 | SN | 3 | C | 2231 | 50 | | |
| HOLL | 14 | 2311 | 2319 | 0027 | N09 | W26 | .447 | | 13.0 | 76 | 1B | 3 | C | | 358 | | |
| LEAR | 14 | 2320E | 2330U | 0002D | N07 | W28 | .472 | | 12.9 | 42D | 1B | 3 | C | | 333 | | D |
| BIGB | 14 | 2347 | 2349 | 0002 | N09 | W40 | .646 | | 12.0 | 15 | SN | 3 | C | 2349 | 100 | 1.3 | |
| MANI | 14 | 2348 | 2350 | 2354 | N07 | W43 | .682 | | 11.8 | 6 | 1B | 3 | C | | 220 | | |
| PEKG | 15 | 0153 | 0154 | 0203 | S11 | W90 | 1.000 | | 8.3 | 13 | 1N | | P | 0154 | 141 | | |
| PEKG | 15 | 0153E | 0158 | 0200 | N09 | W43 | .684 | | 11.9 | 7D | SF | | P | 0154 | 50 | .7 | E |
| LEAR | 15 | 0250 | 0310 | 0330 | N08 | W39 | .631 | | 12.2 | 40 | SN | 3 | C | | 100 | | |
| LEAR | 15 | 0435 | 0436 | 0441 | N08 | E64 | .838 | | 20.0 | 6 | SF | 3 | C | | 18 | | |
| LEAR | 15 | 0520 | 0522 | 0533 | S13 | W89 | 1.000 | | 8.5 | 13 | SF | 3 | C | | | | |
| PEKG | 15 | 0525E | 0526 | 0537 | S10 | W90 | 1.000 | | 8.5 | 12D | 1N | | P | 0526 | 126 | | |
| LEAR | 15 | 0719 | 0720 | 0726D | S05 | W05 | .162 | | 14.9 | 7D | SF | 3 | C | | 95 | | |
| HOLL | 15 | 1620 | 1631 | 1703 | N10 | W50 | .768 | | 11.9 | 43 | SF | 3 | C | | 23 | | |
| BIGB | 15 | 1924 | 1931 | 2003 | S04 | W10 | .210 | | 15.1 | 33 | SF | 3 | C | 2003 | 80 | .8 | |
| BIGB | 15 | 2113 | 2115 | 2122 | N08 | W51 | .777 | | 12.1 | 9 | SN | 3 | C | 2115 | 70 | 1.1 | |
| LEAR | 16 | 0150 | 0150 | 0159 | N08 | W53 | .799 | | 12.1 | 9 | SB | 3 | C | | 57 | | |
| PEKG | 16 | 0154E | 0154 | 0200D | S15 | W75 | .371 | | 10.5 | 6D | SF | | P | 0154 | 17 | | E |
| PEKG | 16 | 0154 | 0158 | 0200 | N03 | W53 | .739 | | 12.1 | 6 | SF | | P | 0154 | 63 | 1.1 | E |
| PEKG | 16 | 0530 | 0550 | 0613 | N09 | W57 | .839 | | 12.0 | 48 | SB | | P | 0544 | 97 | 1.9 | EF |
| LEAR | 16 | 0535 | 0538 | 0645 | N07 | W58 | .847 | | 11.9 | 70 | SN | 3 | C | | 113 | | |
| LEAR | 16 | 0707 | 0707 | 0716 | S22 | W04 | .424 | | 16.0 | 9 | SN | 3 | C | | 45 | | |
| LEAR | 16 | 0713 | 0723 | 0731 | S22 | W05 | .426 | | 15.9 | 12 | SN | 3 | C | | 39 | | |
| LEAR | 16 | 0732 | 0732 | 0750 | S05 | W18 | .335 | | 15.0 | 18 | SF | 3 | C | | 62 | | |
| LEAR | 16 | 0953E | 0954U | 0955D | S05 | W20 | .365 | | 14.9 | 2D | SF | 2 | C | | 175 | | |
| ATHN | 16 | 1259 | 1304 | 1314D | N08 | W65 | .905 | | 11.7 | 15D | SN | 2 | C | | 111 | | |
| ATHN | 16 | 1259 | 1304 | 1343 | S17 | W83 | .935 | | 10.3 | 44 | SN | 2 | C | | | | D |
| BIGB | 16 | 1810 | 1817 | 1900 | N18 | E63 | .895 | | 21.5 | 50 | 1N | 3 | C | 1817 | 100 | 2.3 | |
| PALE | 16 | 1918E | 1919U | 1926 | N11 | E43 | .687 | | 20.0 | 8D | SF | 3 | C | | 23 | | |
| PALE | 16 | 2007E | 2009U | 2028D | N04 | W67 | .920 | | 11.8 | 21D | SF | 3 | C | | 40 | | |
| PALE | 16 | 2150 | 2208 | 2222 | N08 | W63 | .890 | | 12.2 | 32 | SF | 3 | C | | 93 | | |
| BIGB | 16 | 2150 | 2214 | 2234 | N10 | W60 | .866 | | 12.4 | 44 | SB | 3 | C | 2214 | 100 | 2.1 | |
| PALE | 16 | 2200 | 2203 | 2231 | N11 | W57 | .840 | | 12.6 | 31 | SF | 3 | C | | 66 | | |
| PALE | 16 | 2304 | 2313U | 2331 | S20 | W11 | .426 | | 16.1 | 27 | SF | 3 | C | | 41 | | |
| PALE | 16 | 2306 | 2309 | 2314 | N09 | W64 | .898 | | 12.2 | 8 | SF | 3 | C | | 40 | | |
| PALE | 16 | 2303 | 2313 | 2325 | N20 | E72 | .352 | | 22.4 | 16 | SF | 3 | C | | | | |
| BIGB | 16 | 2310 | 2312 | 2344 | N20 | E71 | .347 | | 22.3 | 34 | 1N | 3 | C | 2312 | 70 | | |
| HOLL | 16 | 2312E | 2326 | 2337 | S20 | W12 | .432 | | 16.1 | 25D | SF | 3 | C | | 36 | | |
| PALE | 16 | 2316 | 2321 | 2327 | N13 | W67 | .920 | | 11.9 | 11 | SF | 3 | C | | 35 | | D |
| LEAR | 17 | 0011 | 0013 | 0020 | N10 | W69 | .933 | | 11.8 | 9 | SN | 3 | C | | 33 | | |
| PALE | 17 | 0011 | 0013 | 0033D | N09 | W65 | .906 | | 12.1 | 22D | SF | 3 | C | | 43 | | |
| LEAR | 17 | 0214 | 0218 | 0225 | N09 | E39 | .633 | | 20.0 | 11 | SF | 3 | C | | 26 | | |
| LEAR | 17 | 0230 | 0237 | 0242 | N08 | E40 | .645 | | 20.1 | 12 | SN | 3 | C | | 28 | | |
| PALE | 17 | 0230 | 0232 | 0241 | N09 | E40 | .646 | | 20.1 | 11 | SN | 3 | C | | 22 | | |
| LEAR | 17 | 0321 | 0327 | 0336 | N09 | W71 | .945 | | 11.8 | 15 | SN | 3 | C | | | | |
| PALE | 17 | 0321 | 0327 | 0333D | N08 | W68 | .926 | | 12.0 | 12D | SF | 3 | C | | 102 | | |
| MANI | 17 | 0329E | 0330 | 0334 | N12 | W70 | .939 | | 11.9 | 5D | SF | 3 | C | | 40 | | |
| LEAR | 17 | 0347 | 0348 | 0404 | S05 | W28 | .485 | | 15.1 | 17 | SF | 3 | C | | 63 | | |
| LEAR | 17 | 0403 | 0405 | 0408D | S14 | W32 | 1.001 | | 10.3 | 5D | SN | 3 | C | | | | |
| LEAR | 17 | 0544 | 0546 | 0603 | N12 | W17 | .330 | | 16.0 | 19 | SF | 3 | C | | 40 | | |
| PEKG | 17 | 0548 | 0550 | 0552 | N14 | W19 | .374 | | 15.8 | 4 | SN | | C | 0548 | 38 | .4 | E |

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION — MIN. | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | | | CONG. | TYPE | TIME — UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| WEND | 17 | 0650E | | 0706 | N14 | W18 | .360 | | 15.3 | 16D | SN | | C | 0650 | 41 | .5 | |
| WEND | 17 | 0810 | 0816 | 0822 | N13 | W21 | .394 | | 15.8 | 12 | SF | | C | 0816 | 46 | .5 | |
| LEAR | 17 | 0811 | 0812 | 0824 | N12 | W18 | .344 | | 16.0 | 13 | SF | 3 | C | | 31 | | |
| HOLL | 17 | 1633 | 1633 | 1642 | N12 | E31 | .531 | | 20.0 | 9 | SF | 3 | C | | 24 | | |
| MANI | 17 | 2232E | 2232U | 2245D | N09 | E29 | .491 | | 20.1 | 13D | SF | 2 | C | | 30 | | |
| MANI | 18 | 0042E | 0043 | 0046D | N09 | E28 | .478 | | 20.1 | 4D | SF | 3 | C | | 15 | | |
| PEKG | 18 | 0049 | 0116 | 0153 | NJ7 | E27 | .458 | | 20.1 | 61 | SN | | P | 0116 | 21 | .2 | D |
| LEAR | 18 | 0201 | 0203 | 0212 | N08 | E26 | .445 | | 20.0 | 11 | SB | 3 | C | | 25 | | D |
| MANI | 18 | 0201E | 0201U | 0207D | N10 | E28 | .482 | | 20.2 | 6D | SF | 3 | C | | 25 | | |
| LEAR | 18 | 0206 | 0210 | 0220 | N20 | E58 | .853 | | 22.4 | 14 | SN | 3 | C | | 39 | | |
| LEAR | 18 | 0247 | 0251 | 0259 | N08 | E25 | .430 | | 20.0 | 12 | SN | 3 | C | | 28 | | |
| PEKG | 18 | J25J | J252 | J255 | N12 | E23 | .418 | | 19.8 | 5 | SN | | P | 0252 | 25 | .3 | E |
| LEAR | 18 | 0509 | 0519 | 0527 | N07 | E23 | .396 | | 19.9 | 18 | SB | 3 | C | | 91 | | |
| PEKG | 18 | 0518 | 0520 | 0524 | N08 | E26 | .445 | | 20.2 | 6 | SN | | C | 0520 | 21 | .2 | D |
| MANI | 18 | 0513E | 0519U | 0528D | N08 | E25 | .430 | | 20.1 | 3D | SN | 3 | C | | 50 | | |
| LEAR | 18 | 0605 | 0608 | 0616 | N11 | E23 | .412 | | 23.0 | 11 | SF | 3 | C | | 37 | | |
| BIGB | 18 | 1705 | 1728 | 1744 | N12 | E89 | 1.000 | | 25.4 | 39 | 1B | 3 | C | 1744 | 78 | | |
| PALE | 18 | 1829E | 1840U | 1843D | N15 | E75 | .965 | | 24.4 | 14D | SN | 3 | C | | | | |
| BIGB | 18 | 1859 | 1900 | 1922 | N08 | E18 | .321 | | 20.1 | 23 | SB | 3 | C | 1900 | 90 | 1.0 | |
| HOLL | 18 | 1859 | 1901 | 1922 | N06 | E16 | .281 | | 20.0 | 23 | 1B | 2 | C | | 200 | | D |
| PALE | 18 | 19JJE | 1931U | 1922 | NJ8 | E17 | .305 | | 20.1 | 22D | 1B | 4 | C | | 202 | | |
| PALE | 18 | 1939 | 1941 | 1947 | N09 | E56 | .829 | | 23.8 | 8 | SN | 4 | C | | 43 | | |
| HOLL | 18 | 1939 | 1941 | 1947 | N07 | E54 | .803 | | 22.3 | 8 | SN | 3 | C | | 47 | | |
| HOLL | 18 | 1948 | 1953 | 2038D | N11 | E72 | .950 | | 24.2 | 50D | SN | 3 | C | | | | |
| HOLL | 18 | 2202 | 2225 | 0026 | N14 | E79 | .981 | | 24.8 | 144 | SN | 3 | C | | | | |
| WEND | 19 | 1039E | | 1052D | N14 | E71 | .945 | | 24.8 | 13D | SF | | C | 1047 | 20 | | |
| WEND | 19 | 1314 | 1320 | 1327 | N11 | E04 | .165 | | 13.9 | 13 | SF | | C | 1320 | 32 | .3 | |
| WEND | 19 | 1330 | 1334 | 1356 | N13 | W52 | .793 | | 15.7 | 26 | SN | | C | 1334 | 108 | 1.7 | |
| BIGB | 19 | 2311 | 2313 | 2322 | N08 | E01 | .399 | | 20.0 | 11 | SN | 3 | C | 2322 | 60 | .6 | |
| ISTA | 20 | 0630E | | 0734 | N09 | W05 | .145 | | 19.9 | 64D | 1B | | | | | | F |
| ISTA | 20 | 0645 | | 0724 | S38 | E30 | 1.000 | | 27.0 | 33 | SN | | | | | | DG |
| ISTA | 20 | 0706 | | 0725 | S14 | E66 | .923 | | 25.2 | 19 | SN | | | | | | D |
| WEND | 20 | 1103 | 1106 | 1126 | N13 | W08 | .192 | | 19.9 | 23 | SN | | C | 1106 | 119 | 1.3 | |
| PALE | 20 | 2111 | 2141 | 2231D | N09 | W11 | .222 | | 20.1 | 80D | 1N | 2 | C | | 197 | | |
| MANI | 20 | 2300 | 2302U | 2307D | N11 | W12 | .255 | | 20.1 | 7D | SF | 2 | C | | 30 | | |
| MANI | 20 | 2325E | 2327U | 2331D | N10 | W13 | .260 | | 20.0 | 6D | SN | 3 | C | | 20 | | |
| PEKG | 21 | J018E | J019 | J019D | N13 | W14 | .275 | | 20.0 | 1D | SF | | P | 0018 | 84 | .9 | EK |
| MANI | 21 | 0027 | 0029 | 0037 | N17 | E57 | .847 | | 25.3 | 10 | SB | 3 | C | | 40 | | |
| PEKG | 21 | 0040E | 0040 | 0047D | N11 | W13 | .270 | | 20.1 | 7D | SF | | P | 0040 | 88 | 1.0 | E |
| PEKG | 21 | 0131E | 0132 | 0157 | N10 | W14 | .275 | | 20.0 | 26D | SN | | P | 0132 | 105 | 1.2 | E |
| MANI | 21 | 0233E | 0235 | 0242D | N16 | E56 | .837 | | 25.3 | 9D | SN | 3 | C | | 40 | | |
| PEKG | 21 | 0238 | 0240 | 0245 | N15 | E56 | .836 | | 25.3 | 7 | SN | | P | 0240 | 21 | .4 | D |
| PALE | 21 | 0246 | 0248 | 0255 | S18 | E55 | .846 | | 25.2 | 9 | SF | 3 | C | | 27 | | |
| PALE | 21 | 0256 | 0324 | 0346 | S18 | E54 | .837 | | 25.2 | 50 | SB | 3 | C | | 117 | | |
| PEKG | 21 | 0306 | 0307 | 0315 | S19 | E55 | .848 | | 25.3 | 9 | SN | | P | 0310 | 46 | .8 | P |
| PALE | 21 | 0314 | 0338 | 0435 | N09 | W18 | .328 | | 19.8 | 51 | SN | 3 | C | | 134 | | |
| PALE | 21 | 0316 | 0321 | 0330 | N16 | E49 | .768 | | 24.8 | 14 | SF | 3 | C | | 20 | | |
| MANI | 21 | 0322E | 0324 | 0323D | S18 | E55 | .846 | | 25.3 | 7D | SB | 3 | C | | 50 | | |
| LEAR | 21 | 0326E | 0326U | 0328 | S19 | E54 | .840 | | 25.2 | 2D | SN | 3 | C | | 85 | | |
| LEAR | 21 | 0334 | 0334 | 0350 | NJ9 | W18 | .328 | | 19.8 | 16 | SN | 3 | C | | 37 | | |
| PEKG | 21 | 0340 | 0342 | 0345 | N11 | W17 | .326 | | 19.9 | 5 | SN | | P | 0342 | 139 | 1.6 | E |
| PALE | 21 | 0342 | 0346 | 0403 | N17 | E53 | .810 | | 25.1 | 21 | 1B | 3 | C | | 251 | | |
| LEAR | 21 | 0343 | 0346U | 0355 | N16 | E54 | .818 | | 25.2 | 12 | SN | 3 | C | | 126 | | |
| PEKG | 21 | 0344 | 0346 | 0350 | N16 | W55 | .828 | | 17.0 | 6 | SB | | P | 0346 | 88 | 1.8 | E |
| MANI | 21 | J345E | J347 | J352 | N16 | E55 | .828 | | 25.3 | 7D | 1B | 3 | C | | 150 | | |
| PEKG | 21 | 0434 | 0441 | 0457 | N11 | W15 | .298 | | 20.1 | 23 | SF | | P | 0441 | 76 | .7 | E |
| PEKG | 21 | 0507 | 0510 | 0513 | S18 | E53 | .828 | | 25.2 | 6 | SF | | C | 0510 | 34 | .6 | D |
| PEKG | 21 | 0510E | 0522 | 0545D | S25 | E90 | 1.000 | | 28.0 | 35D | | | P | 0522 | | | Y |
| PEKG | 21 | 0525 | 0546 | 0546D | N10 | W19 | .349 | | 19.8 | 21D | SN | | C | 0546 | 105 | 1.2 | E |
| LEAR | 21 | 0525 | 0527 | 0544 | N15 | E17 | .360 | | 22.5 | 19 | SF | 3 | C | | 63 | | |
| LEAR | 21 | 0625 | 0627 | 0641 | S20 | E52 | .825 | | 25.2 | 16 | SF | 3 | C | | 39 | | |
| LEAR | 21 | 0633 | 0636 | 0648 | N13 | E53 | .804 | | 25.2 | 15 | SB | 3 | C | | 70 | | |
| LEAR | 21 | 0634 | 0636 | 0647D | N09 | W19 | .344 | | 19.8 | 13D | SB | 3 | C | | 30 | | |
| MANI | 21 | 0634E | 0634U | 0642D | N15 | E53 | .807 | | 25.2 | 8D | SF | 3 | C | | 40 | | |
| MANI | 21 | 0634E | 0634U | 0642D | N10 | W17 | .319 | | 20.0 | 8D | SN | 3 | C | | 20 | | |
| LEAR | 21 | 0638 | 0639 | 0648 | N18 | E16 | .380 | | 22.5 | 10 | SF | 3 | C | | 33 | | |
| LEAR | 21 | 0857 | 0900 | 0908 | N20 | W69 | .337 | | 16.2 | 11 | SN | 3 | C | | | | |
| WEND | 21 | 1247 | 1254 | 1325 | N10 | W20 | .364 | | 20.0 | 38 | 1F | | C | 1254 | 194 | 2.2 | E |

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| WEND | 21 | 1256 | 1302 | 1317 | N12 | E50 | .772 | | 25.3 | 21 | 1N | | C | 1302 | 219 | 3.6 | |
| WEND | 21 | 1331 | 1333 | 1338 | N13 | E50 | .773 | | 25.3 | 7 | SF | | C | 1333 | 56 | .9 | |
| WEND | 21 | 1443 | 1456 | 1520 | N10 | E20 | .364 | | 23.1 | 31 | SF | | C | 1456 | 69 | .8 | E |
| WEND | 21 | 1556 | 1634 | 1615 | S28 | E55 | .873 | | 25.8 | 19 | SF | | C | 1604 | 75 | 1.5 | G |
| WEND | 21 | 1608 | 1615 | 1627 | N12 | E49 | .761 | | 25.3 | 19 | SN | | C | 1615 | 106 | 1.7 | |
| PALE | 21 | 1737E | 1748U | 1841 | N17 | E48 | .760 | | 25.3 | 64D | SF | 3 | C | | 33 | | |
| PALE | 21 | 1737E | 1744 | 1750 | N13 | E12 | .351 | | 22.6 | 13D | SF | 3 | C | | 24 | | |
| PALE | 21 | 1737E | 1811U | 1908 | N23 | E59 | .873 | | 26.2 | 91D | SF | 3 | C | | 80 | | |
| PALE | 21 | 1840 | 1842 | 1845 | N09 | W19 | .344 | | 20.4 | 5 | SF | 3 | C | | 45 | | |
| PALE | 21 | 2129E | 2132U | 2134D | N09 | W21 | .374 | | 20.3 | 5D | SN | 3 | C | | 122 | | |
| LEAR | 21 | 2314 | 2317 | 2328 | N12 | W03 | .173 | | 21.7 | 14 | SF | 3 | C | | 52 | | |
| LEAR | 21 | 2342 | 2354 | 0006 | N11 | W07 | .195 | | 21.5 | 24 | SF | 3 | C | | 79 | | |
| MANI | 21 | 2350E | 2350U | 2358 | N12 | W09 | .230 | | 21.3 | 8D | SF | 3 | C | | 60 | | |
| PEKG | 22 | 0322 | 0324 | 0331 | N17 | E41 | .682 | | 25.2 | 9 | SN | | C | 0324 | 92 | 1.4 | E |
| MANI | 22 | 0323E | 0324 | 0331 | N17 | E43 | .705 | | 25.4 | 8D | SF | 3 | C | | 50 | | |
| PEKG | 22 | 0400 | 0405 | 0410 | S27 | E47 | .807 | | 25.7 | 1D | SF | | C | 0405 | 16 | .2 | E |
| PEKG | 22 | 0643 | 0648 | 0653 | N11 | W37 | .613 | | 19.5 | 7 | SN | | P | 0648 | 29 | .4 | D |
| WEND | 22 | 0737 | 0739 | 0745 | N12 | E35 | .589 | | 24.9 | 8 | SF | | C | 0739 | 38 | .5 | |
| WEND | 22 | 0842 | 0844 | 0850 | N13 | E38 | .632 | | 25.2 | 8 | SF | | C | 0844 | 31 | .4 | |
| WEND | 22 | 1003E | | 1020 | S28 | E46 | .803 | | 25.9 | 17D | SF | | C | 1003 | 56 | .9 | |
| WEND | 22 | 1035 | 1037 | 1042 | N12 | E32 | .548 | | 24.8 | 7 | SF | | C | 1037 | 56 | .7 | |
| WEND | 22 | 1058 | 1100 | 1105 | N15 | E40 | .663 | | 25.5 | 7 | SF | | C | 1100 | 56 | .8 | |
| WEND | 22 | 1143 | 1145 | 1204 | N09 | W33 | .635 | | 19.6 | 21 | SN | | C | 1145 | 138 | 1.9 | |
| WEND | 22 | 1221 | 1222 | 1240 | S18 | E35 | .641 | | 25.1 | 13 | SN | | C | 1222 | 63 | .8 | |
| WEND | 22 | 1428 | 1436 | 1455 | N10 | W42 | .675 | | 19.5 | 27 | SN | | C | 1436 | 125 | 1.8 | S |
| BIGB | 22 | 1552 | 1606 | 1719 | N13 | E08 | .234 | | 23.3 | 87 | SF | 3 | C | 1606 | 180 | 1.9 | |
| BIGB | 22 | 1600 | 1702 | 1747 | S20 | E30 | .598 | | 24.9 | 107 | SF | 3 | C | 1702 | 110 | 1.3 | |
| BIGB | 22 | 1713 | 1727 | 1744 | N08 | W42 | .672 | | 19.6 | 31 | SN | 3 | C | 1727 | 80 | 1.1 | |
| BIGB | 22 | 1730 | 1731 | 1742 | N03 | W36 | .594 | | 20.0 | 12 | SF | 3 | C | 1731 | 60 | .8 | |
| BIGB | 22 | 1733 | 1735 | 1753 | N19 | E33 | .595 | | 25.2 | 20 | SF | 3 | C | 1735 | 50 | .6 | |
| BIGB | 22 | 1845 | 1847 | 1908 | N10 | W38 | .624 | | 19.9 | 23 | SF | 3 | C | 1847 | 70 | .9 | |
| BIGB | 22 | 1940 | 1950 | 2010 | N09 | W45 | .711 | | 19.4 | 30 | SB | 3 | C | 1950 | 80 | 1.2 | |
| BIGB | 22 | 2043 | 2045 | 2102 | N20 | E30 | .565 | | 25.1 | 13 | SN | 3 | C | 2045 | 90 | 1.1 | |
| HOLL | 22 | 2158 | 2204 | 2213 | N16 | E29 | .527 | | 25.1 | 15 | SB | 3 | C | | 134 | | D |
| BIGB | 22 | 2216 | 2219 | 2250 | N10 | W40 | .650 | | 19.9 | 34 | SB | 1 | C | 2219 | 80 | 1.1 | |
| HOLL | 22 | 2217 | 2218 | 2248 | N09 | W41 | .661 | | 19.9 | 31 | SB | 3 | C | | 95 | | D |
| MANI | 22 | 2220E | 2221U | 2228D | N08 | W41 | .659 | | 19.3 | 8D | SB | 3 | C | | 70 | | D |
| PALE | 22 | 2224E | 2225 | 2240D | N10 | W40 | .650 | | 19.9 | 16D | SF | 3 | C | | 74 | | D |
| BIGB | 22 | 2341 | 2354 | 0018D | N08 | W47 | .733 | | 19.5 | 37D | 1B | 2 | C | 2354 | 180 | 2.7 | |
| HOLL | 22 | 2351 | 2354 | 0024 | N08 | W48 | .745 | | 19.4 | 33 | 2B | 3 | C | | 523 | | D |
| MANI | 22 | 2352E | 2352 | 2359D | N08 | W47 | .733 | | 19.5 | 7D | 1N | 3 | C | | 250 | | |
| LEAR | 22 | 2357E | 0001 | 0007D | N08 | W47 | .733 | | 19.5 | 10D | 1B | 2 | C | | 381 | | |
| HOLL | 23 | 0020 | 0021 | 0038 | S18 | E26 | .536 | | 25.0 | 18 | SF | 3 | C | | 28 | | |
| LEAR | 23 | 0022 | 0024 | 0034 | S17 | E27 | .540 | | 25.0 | 12 | SF | 3 | C | | 28 | | |
| LEAR | 23 | 0106 | 0107 | 0115 | N14 | E23 | .434 | | 24.8 | 9 | SF | 3 | C | | 40 | | |
| LEAR | 23 | 0154 | 0154 | 0204D | N08 | W48 | .745 | | 19.5 | 10D | SF | 3 | C | | 34 | | |
| LEAR | 23 | 0313E | 0321U | 0338D | N20 | E33 | .601 | | 25.6 | 25D | SF | 2 | C | | 57 | | |
| MANI | 23 | 0343E | 0343 | 0351D | N20 | E32 | .589 | | 25.6 | 8D | SF | 3 | C | | 40 | | |
| MANI | 23 | 0653E | 0658 | 0726 | N10 | W54 | .812 | | 19.2 | 33D | 2B | 3 | C | | 300 | | |
| LEAR | 23 | 0700E | 0707 | 0747 | N10 | W53 | .801 | | 19.3 | 47D | 2B | 3 | C | | 963 | | |
| LEAR | 23 | 0733 | 0735 | 0754 | S18 | E22 | .491 | | 25.0 | 21 | SB | 3 | C | | 177 | | D |
| MANI | 23 | 0734E | 0735 | 0745D | S19 | E25 | .534 | | 25.2 | 11D | SN | 3 | C | | 120 | | |
| LEAR | 23 | 0826 | 0828 | 0841 | N12 | W44 | .704 | | 20.1 | 15 | SF | 3 | C | | 58 | | |
| LEAR | 23 | 0840 | 0840 | 0846 | N16 | E24 | .462 | | 25.2 | 6 | SF | 3 | C | | 78 | | |
| WEND | 23 | 1106 | | 1139 | S18 | E21 | .480 | | 25.0 | 33 | SN | | C | 1110 | 69 | .8 | |
| WEND | 23 | 1133 | 1139 | 1150 | N10 | W46 | .724 | | 20.0 | 17 | SF | | C | 1139 | 63 | .9 | |
| RAMY | 23 | 1144 | 1148 | 1159 | N11 | W48 | .749 | | 19.9 | 15 | 1F | 3 | C | | 196 | | |
| WEND | 23 | 1203 | 1205 | 1236 | N10 | W55 | .821 | | 19.4 | 33 | 1B | | C | 1205 | 200 | 3.7 | |
| WEND | 23 | 1222 | 1242 | 1331 | S14 | E18 | .405 | | 24.9 | 69 | 1N | | C | 1242 | 344 | 3.9 | E |
| WEND | 23 | 1432E | | 1510D | N13 | E19 | .372 | | 25.0 | 38D | 1F | | C | 1442 | 219 | 2.5 | E |
| HOLL | 23 | 1436 | 1446 | 1458 | S17 | E18 | .437 | | 25.0 | 22 | SF | 3 | C | | 26 | | |
| BIGB | 23 | 1514 | 1517 | 1528 | S45 | E52 | .311 | | 27.5 | 14 | SN | 2 | C | 1517 | 60 | 1.0 | |
| HOLL | 23 | 1516 | 1517 | 1528 | S46 | E52 | .315 | | 27.5 | 12 | SF | 3 | C | | 51 | | |
| HOLL | 23 | 1557 | 1600 | 1613 | N12 | W45 | .716 | | 20.3 | 16 | SN | 3 | C | | 65 | | |
| BIGB | 23 | 1558 | 1602 | 1622 | N14 | W45 | .720 | | 20.3 | 24 | SN | 2 | C | 1602 | 70 | 1.0 | |
| PALE | 23 | 1735 | 1737 | 1835D | N07 | W57 | .839 | | 19.5 | 60D | 2B | 3 | C | | 331 | | |
| BIGB | 23 | 1735 | 1738 | 1753 | N08 | W58 | .849 | | 19.4 | 24 | 1B | 2 | C | 1738 | 180 | 3.5 | |
| HOLL | 23 | 1927 | 1932 | 1959 | S19 | E15 | .432 | | 24.9 | 32 | SB | 3 | C | | 164 | | |
| BIGB | 23 | 1927 | 1932 | 1946 | S17 | E15 | .407 | | 24.9 | 19 | SN | 3 | C | 1932 | 70 | .8 | |
| HOLL | 23 | 1930 | 1934 | 1948 | N07 | W60 | .865 | | 19.3 | 18 | SF | 3 | C | | 23 | | |

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMR DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mill. of Disk | CORR. AREA Sq. Deg. | |
| BIGB | 23 | 1931 | 1935 | 1952 | N07 | W60 | .866 | | 19.3 | 21 | SN | 3 | C | 1932 | 60 | 1.2 | |
| HOLL | 23 | 2023 | 2030 | 2037 | N11 | W07 | .198 | | 23.3 | 14 | SF | 3 | C | | 22 | | |
| HOLL | 23 | 2023 | 2025 | 2030 | N08 | W60 | .866 | | 19.3 | 7 | SF | 3 | C | | 27 | | |
| HOLL | 23 | 2114 | 2118 | 2139 | N09 | W61 | .875 | | 19.3 | 25 | 1N | 3 | C | | 144 | | |
| BIGB | 23 | 2114 | 2118 | 2143 | N09 | W60 | .867 | | 19.4 | 35 | 1B | 3 | C | 2118 | 100 | 2.1 | |
| HOLL | 23 | 2135 | 2140 | 2213 | N15 | W16 | .358 | | 22.7 | 38 | SF | 3 | C | | 70 | | |
| HOLL | 23 | 2208 | 2219 | 2220 | N08 | W62 | .883 | | 19.3 | 12 | SF | 3 | C | | 16 | | |
| MANI | 23 | 2246E | 2246U | 2258D | N09 | W61 | .875 | | 19.4 | 12D | SF | 3 | C | | 25 | | |
| HOLL | 23 | 2252 | 2303 | 2308 | N08 | W62 | .883 | | 19.3 | 16 | SN | 3 | C | | 40 | | |
| PEKG | 24 | 0209E | 0215 | 0227D | N09 | W65 | .907 | | 19.2 | 18D | SN | | C | 0215 | 26 | | |
| MANI | 24 | 0601 | 0602 | 0604D | N12 | W11 | .258 | | 23.4 | 3D | SF | 3 | C | | 30 | | |
| LEAR | 24 | 0618 | 0620 | 0636 | N09 | W67 | .921 | | 19.2 | 18 | SN | 3 | C | | 63 | | |
| LEAR | 24 | 0625 | 0626 | 0634 | N09 | E03 | .135 | | 24.5 | 9 | SB | 3 | C | | 103 | | |
| MANI | 24 | 0626E | 0626 | 0623D | N11 | E09 | .222 | | 24.9 | 3D | SN | 3 | C | | 50 | | |
| LEAR | 24 | 0711 | 0725 | 0755 | N09 | W68 | .927 | | 19.2 | 44 | 1B | 3 | C | | 207 | | |
| MANI | 24 | 0722E | 0723U | 0735D | N09 | W63 | .891 | | 19.6 | 13D | SN | 3 | C | | 65 | | |
| LEAR | 24 | 0838E | 0839U | 0852 | N09 | E01 | .127 | | 24.4 | 14D | SF | 3 | C | | 30 | | |
| LEAR | 24 | 0902 | 0905 | 0921 | N09 | W68 | .927 | | 19.3 | 13 | SN | 3 | C | | 45 | | |
| LEAR | 24 | 0943 | 0944 | 0950 | N09 | W69 | .933 | | 19.2 | 7 | SN | 3 | C | | 62 | | |
| WEND | 24 | 1418E | | 1431D | N17 | W25 | .483 | | 22.7 | 13D | SF | | C | 1425 | 94 | 1.1 | E |
| BIGB | 24 | 1612 | 1618 | 1632 | N06 | W70 | .939 | | 19.4 | 20 | SF | 3 | C | 1618 | 60 | | |
| RAMY | 24 | 1612 | 1617 | 1623 | N07 | W67 | .920 | | 19.7 | 17 | SF | 3 | C | | 73 | | |
| RAMY | 24 | 1648 | 1652 | 1706 | N10 | W02 | .147 | | 24.6 | 18 | SF | 3 | C | | 47 | | |
| RAMY | 24 | 1723 | 1744 | 1754 | N16 | W30 | .245 | | 24.7 | 31 | SF | 3 | C | | 130 | | |
| BIGB | 24 | 1730 | 1731 | 1753 | N11 | W70 | .940 | | 19.5 | 23 | SN | 3 | C | 1731 | 50 | | |
| PALE | 24 | 1730E | 1731U | 1750D | N14 | E07 | .243 | | 25.3 | 20D | SN | 2 | C | | 62 | | |
| RAMY | 24 | 1730 | 1732 | 1741 | N09 | W66 | .914 | | 19.8 | 11 | SN | 3 | C | | 47 | | |
| PALE | 24 | 1730E | 1731U | 1755D | N12 | W72 | .951 | | 19.3 | 25D | SN | 2 | C | | 28 | | |
| PALE | 24 | 1730E | 1731U | 1750D | N14 | E07 | .243 | | 25.3 | 20D | SN | 2 | C | | 62 | | |
| BIGB | 24 | 1730 | 1733 | 1740 | N13 | E07 | .228 | | 25.3 | 10 | SN | 3 | C | 1733 | 50 | .5 | |
| PALE | 24 | 1750E | 1751U | 1755D | N11 | W02 | .164 | | 24.6 | 5D | SF | 2 | C | | 22 | | |
| RAMY | 24 | 1824 | 1826 | 1847 | N22 | E19 | .460 | | 26.2 | 23 | SN | 3 | C | | 73 | | |
| RAMY | 24 | 1824 | 1825 | 1832 | N09 | W04 | .143 | | 24.5 | 8 | SF | 3 | C | | 65 | | |
| PALE | 24 | 1826 | 1826 | 1837 | N23 | E19 | .471 | | 26.2 | 11 | SN | 3 | C | | 51 | | |
| RAMY | 24 | 1851 | 1857 | 1918 | N10 | W04 | .159 | | 24.5 | 27 | SN | 3 | C | | 98 | | |
| PALE | 24 | 1855 | 1857 | 1329 | N11 | W04 | .174 | | 24.5 | 34 | SF | 3 | C | | 42 | | |
| RAMY | 24 | 1901 | 1902 | 1912D | N07 | W73 | .956 | | 19.3 | 11D | SB | 3 | C | | | | |
| PALE | 24 | 1901 | 1902 | 1910 | N09 | W72 | .951 | | 19.4 | 9 | SB | 3 | C | | | | D |
| PALE | 24 | 1916 | 1916 | 1928 | N07 | W63 | .891 | | 20.1 | 12 | SF | 3 | C | | 21 | | |
| RAMY | 24 | 1916 | 1916 | 1923 | N05 | W67 | .920 | | 19.8 | 7 | SF | 3 | C | | 16 | | |
| RAMY | 24 | 1930 | 1930 | 1942 | N10 | W04 | .159 | | 24.5 | 12 | SF | 3 | C | | 45 | | |
| RAMY | 24 | 1943 | 1945 | 1952 | N16 | W01 | .246 | | 24.7 | 9 | SF | 3 | C | | 23 | | |
| RAMY | 24 | 2004 | 2005 | 2010 | N09 | W05 | .152 | | 24.5 | 6 | SF | 3 | C | | 48 | | |
| RAMY | 24 | 2035 | 2046 | 2059 | N06 | W68 | .927 | | 19.8 | 24 | SF | 3 | C | | 15 | | |
| PALE | 24 | 2114 | 2114 | 2126 | N13 | W05 | .167 | | 24.5 | 12 | SF | 3 | C | | 27 | | |
| HOLL | 24 | 2218E | 2225U | 2225D | N13 | W02 | .197 | | 24.8 | 7D | 1N | 3 | C | | 389 | | |
| HOLL | 24 | 2218E | 2232 | 2325 | N09 | W07 | .174 | | 24.4 | 67D | 1N | 3 | C | | 281 | | |
| BIGB | 24 | 2213 | 2230 | 2333 | N11 | W07 | .200 | | 24.4 | 74 | SN | 3 | C | 2230 | 170 | 1.8 | |
| PALE | 24 | 2222E | 2222U | 2302D | N10 | W06 | .176 | | 24.5 | 43D | 1N | 3 | C | | 237 | | |
| MANI | 24 | 2230E | 2230U | 2238D | N15 | W02 | .231 | | 24.8 | 8D | SF | 2 | C | | 180 | | |
| MANI | 24 | 2303E | 2303U | 2311D | N15 | W02 | .231 | | 24.8 | 9D | SF | 3 | C | | 40 | | |
| PEKG | 25 | 0007E | 0009 | 0015 | N11 | W06 | .192 | | 24.6 | 8D | SN | | P | 0009 | 55 | .6 | E |
| PALE | 25 | 0059 | 0102 | 0121 | N11 | W07 | .202 | | 24.5 | 22 | SN | 3 | C | | 53 | | D |
| PEKG | 25 | 0102 | 0104 | 0115 | N11 | W07 | .202 | | 24.5 | 13 | SB | | P | 0104 | 38 | .4 | E |
| LEAR | 25 | 0103E | 0103U | 0126 | N12 | W02 | .183 | | 24.9 | 23D | SN | 3 | C | | 60 | | |
| LEAR | 25 | 0137 | 0141 | 0143 | S18 | W03 | .340 | | 24.8 | 12 | SF | 3 | C | | 35 | | |
| PEKG | 25 | 0140 | 0142 | 0147 | S17 | W03 | .324 | | 24.8 | 7 | SN | | P | 0142 | 21 | .2 | E |
| PALE | 25 | 0152 | 0158 | 0209 | N11 | W09 | .224 | | 24.4 | 17 | SN | 3 | C | | 125 | | |
| LEAR | 25 | 0157 | 0157 | 0204 | N12 | W03 | .187 | | 24.9 | 7 | SN | 3 | C | | 85 | | |
| PEKG | 25 | 0157 | 0159 | 0200D | N11 | W09 | .224 | | 24.4 | 3D | SN | | P | 0159 | 46 | .5 | E |
| PALE | 25 | 0253 | 0302 | 0323 | N12 | W07 | .216 | | 24.6 | 3D | SF | 3 | C | | 161 | | D |
| LEAR | 25 | 0300 | 0303 | 0315 | N12 | W03 | .187 | | 24.9 | 15 | SN | 3 | C | | 108 | | |
| LEAR | 25 | 0315 | 0317 | 0322 | N10 | E01 | .146 | | 25.2 | 7 | SN | 3 | C | | 61 | | |
| MANI | 25 | 0317E | 0318 | 0320D | N15 | E02 | .233 | | 25.3 | 3D | SF | 3 | C | | 25 | | |
| LEAR | 25 | 0417 | 0418 | 0424 | N12 | W04 | .192 | | 24.9 | 7 | SF | 3 | C | | 33 | | |
| LEAR | 25 | 0506 | 0510 | 0522 | N12 | W06 | .207 | | 24.8 | 16 | SB | 3 | C | | 71 | | |
| LEAR | 25 | 0524 | 0525 | 0532 | N11 | W89 | 1.000 | | 18.6 | 8 | SN | 3 | C | | | | |
| LEAR | 25 | 0544 | 0545 | 0555 | S18 | W06 | .351 | | 24.8 | 11 | SF | 3 | C | | 40 | | |
| LEAR | 25 | 0600 | 0601 | 0606 | N10 | W10 | .225 | | 24.5 | 6 | SF | 3 | C | | 32 | | |

# Hα SOLAR FLARES

MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. LNG. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMP. DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| LEAR | 25 | 0614 | 0632 | 0701 | N11 | W78 | .978 | | 19.4 | 47 | SN | 3 | C | | | | |
| LEAR | 25 | 0741 | 0748 | 0811 | N14 | E02 | .216 | | 25.5 | 30 | SN | 3 | C | | 69 | | |
| MANI | 25 | 0750E | 0753 | 0753 | N17 | E08 | .265 | | 25.3 | 3D | SN | 3 | C | | 15 | | |
| MANI | 25 | 0751E | 0755U | 0757 | N10 | W72 | .951 | | 19.9 | 6D | SF | 3 | C | | 50 | | |
| LEAR | 25 | 0753 | 0757 | 0801 | N09 | W89 | 1.000 | | 18.7 | 8 | SN | 3 | C | | | | |
| LEAR | 25 | 0826 | 0826 | 0836 | S18 | W07 | .356 | | 24.8 | 10 | SF | 3 | C | | 42 | | |
| LEAR | 25 | 0843 | 0850 | 0912 | N19 | W38 | .657 | | 22.5 | 29 | SN | 3 | C | | 71 | | |
| ATHN | 25 | 0843 | 0847 | 0913 | N19 | W36 | .633 | | 22.7 | 30 | SN | 3 | C | | 127 | | |
| MANI | 25 | 0844E | 0844 | 0859D | N22 | W35 | .638 | | 22.7 | 150 | SN | 3 | C | | 70 | | |
| LEAR | 25 | 0917 | 0922 | 0923D | N10 | W89 | 1.000 | | 18.7 | 6D | SF | 3 | C | | | | |
| WEND | 25 | 1449 | 1501 | 1526 | N11 | W06 | .192 | | 25.2 | 37 | SF | | C | 1501 | 69 | .7 | |
| HOLL | 25 | 1451 | 1456 | 1527 | N19 | W43 | .714 | | 22.4 | 36 | SN | 3 | C | | 63 | | |
| HOLL | 25 | 1511 | 1513 | 1522 | S18 | E68 | .338 | | 30.7 | 11 | SF | 3 | C | | 16 | | |
| WEND | 25 | 1601 | 1607 | 1626 | S15 | E70 | .946 | | 30.9 | 25 | SF | | C | 1607 | 38 | | |
| PALE | 25 | 1754 | 1805 | 1818 | N17 | W10 | .313 | | 25.0 | 24 | SF | 3 | C | | 37 | | |
| HOLL | 25 | 1802 | 1802 | 1812 | N14 | W11 | .283 | | 24.9 | 10 | SF | 3 | C | | 38 | | |
| BIGB | 25 | 1833 | 1844 | 1910 | S45 | E25 | .785 | | 27.7 | 31 | SN | 3 | C | 1844 | 80 | .9 | |
| HOLL | 25 | 1833 | 1847 | 1905 | S49 | E25 | .820 | | 27.7 | 26 | SN | 3 | C | | 66 | | |
| PALE | 25 | 1850 | 1850 | 1901 | S45 | E26 | .789 | | 27.7 | 11 | SF | 3 | C | | 39 | | |
| HOLL | 25 | 1858 | 1928 | 2019 | N20 | W44 | .728 | | 22.5 | 81 | SF | 3 | C | | 78 | | |
| BIGB | 25 | 1900 | 1911 | 2028 | N18 | W45 | .732 | | 22.4 | 88 | SF | 3 | C | 1911 | 60 | .9 | |
| PALE | 25 | 1901 | 1909 | 2029 | N18 | W45 | .732 | | 22.4 | 88 | SF | 3 | C | | 43 | | |
| PALE | 25 | 1922 | 1922 | 1941 | N15 | W05 | .246 | | 25.4 | 19 | SN | 3 | C | | 36 | | |
| HOLL | 25 | 1924 | 1924 | 1932 | N12 | W06 | .207 | | 25.4 | 8 | SN | 3 | C | | 56 | | |
| HOLL | 25 | 2037 | 2043 | 2052 | N18 | W46 | .743 | | 22.4 | 15 | SF | 3 | C | | 53 | | |
| HOLL | 25 | 2039 | 2048 | 2123 | N09 | W89 | 1.000 | | 18.2 | 44 | 2B | 3 | C | | | | |
| BIGB | 25 | 2039 | 2046 | 2125 | N09 | W87 | .998 | | 19.3 | 46 | 2B | 3 | C | 2046 | 310 | | |
| PALE | 25 | 2040E | 2048U | 2122D | N11 | W79 | .981 | | 19.9 | 42D | 1N | 3 | C | | | | |
| PALE | 25 | 2303E | 0006U | 0019 | N11 | W06 | .192 | | 25.5 | 76D | SF | 3 | C | | 88 | | |
| PALE | 26 | 0156 | 0158 | 0201D | S43 | E23 | .756 | | 27.8 | 5D | SF | 2 | C | | 25 | | |
| PALE | 26 | 0226E | 0228U | 0252D | N10 | W19 | .353 | | 24.7 | 26D | SF | 2 | C | | 21 | | |
| LEAR | 26 | 0227 | 0240 | 0245 | N09 | W21 | .378 | | 24.5 | 18 | SN | 3 | C | | 28 | | |
| PEKG | 26 | 0228 | 0230 | 0244 | N11 | W20 | .375 | | 24.6 | 16 | SF | | C | 0230 | 71 | .8 | E |
| PALE | 26 | 0244E | 0252U | 0330 | N18 | W42 | .693 | | 23.0 | 46D | SF | 2 | C | | 27 | | |
| LEAR | 26 | 0248 | 0251 | 0318 | N18 | W44 | .722 | | 22.8 | 30 | SN | 3 | C | | 25 | | |
| ISTA | 26 | 0625E | | 0647 | N46 | E22 | .748 | | 27.9 | 22D | 1B | | | | | | U |
| LEAR | 26 | 0716E | 0716U | 0720D | N11 | W40 | .654 | | 23.3 | 4D | SN | 3 | C | | 34 | | |
| PEKG | 26 | 0720 | 0723 | 0727D | N12 | W39 | .643 | | 23.4 | 7D | SN | | C | 0723 | 29 | .4 | E |
| ATHN | 26 | 1025E | 1031U | 1053 | S42 | E18 | .725 | | 27.8 | 34D | SB | 3 | C | | 127 | | |
| ATHN | 26 | 1120E | 1125U | 1144 | N39 | W10 | .623 | | 25.7 | 24D | SB | 3 | C | | 64 | | |
| HOLL | 26 | 1442 | 1448 | 1512 | N17 | W19 | .411 | | 25.2 | 30 | SB | 3 | C | | 150 | | D |
| PALE | 26 | 1717E | 1724U | 1741 | N17 | W20 | .423 | | 25.2 | 24D | SF | 3 | C | | 52 | | |
| PALE | 26 | 1717E | 1724 | 1727 | S43 | E14 | .723 | | 27.8 | 10D | SF | 3 | C | | 29 | | |
| PALE | 26 | 1745 | 1755 | 1759 | N11 | W30 | .519 | | 24.5 | 14 | SF | 3 | C | | 24 | | |
| PALE | 26 | 1807 | 1815 | 1834 | N17 | W21 | .435 | | 25.2 | 27 | SB | 3 | C | | 107 | | D |
| BOUL | 26 | 1813E | 1817 | 1823D | N16 | W18 | .389 | | 25.4 | 10D | 1N | 1 | C | | 240 | | |
| HOLL | 26 | 1823E | 1823U | 1903 | N19 | W22 | .465 | | 25.1 | 40D | 1B | 3 | C | | 306 | | D |
| HOLL | 26 | 1933 | 1940 | 2001 | N11 | W46 | .727 | | 23.4 | 22 | 1B | 3 | C | | 160 | | |
| HOLL | 26 | 2048 | 2049 | 2055 | S17 | W27 | .536 | | 24.8 | 7 | SF | 3 | C | | 67 | | |
| PALE | 26 | 2051E | 2051U | 2102D | S17 | W28 | .548 | | 24.8 | 11D | SF | 3 | C | | 36 | | |
| HOLL | 26 | 2134 | 2134 | 2138 | N18 | W23 | .469 | | 25.2 | 4 | SN | 3 | C | | 33 | | |
| HOLL | 26 | 2344 | 2352 | 2358 | N13 | W30 | .527 | | 24.7 | 14 | SN | 3 | C | | 26 | | |
| LEAR | 27 | 0000E | | 0009 | N17 | W24 | .474 | | 25.2 | 9D | SF | 3 | C | | 25 | | |
| LEAR | 27 | 0154 | 0203 | 0228 | S46 | E08 | .742 | | 27.7 | 34 | SN | 3 | C | | 186 | | |
| PALE | 27 | 0158 | 0202U | 0223 | S43 | E08 | .707 | | 27.7 | 25 | SN | 2 | C | | 72 | | |
| PALE | 27 | 0159 | 0220U | 0239 | N21 | W61 | .887 | | 22.5 | 40 | SF | 2 | C | | 53 | | |
| LEAR | 27 | 0241 | 0241 | 0248 | S47 | E08 | .754 | | 27.7 | 7 | SF | 3 | C | | 20 | | |
| LEAR | 27 | 0245 | 0249 | 0318 | N17 | W26 | .499 | | 25.2 | 33 | SN | 3 | C | | 188 | | |
| LEAR | 27 | 0311 | 0326 | 0355 | S44 | E04 | .714 | | 27.4 | 44 | SN | 3 | C | | 69 | | |
| MANI | 27 | 0337E | 0338 | 0344D | S43 | E05 | .703 | | 27.5 | 7D | SN | 3 | C | | 85 | | D |
| LEAR | 27 | 0406 | 0409 | 0432 | S45 | E07 | .723 | | 27.7 | 26 | SN | 3 | C | | 39 | | |
| PEKG | 27 | 0410E | 0410E | 0500 | S45 | E05 | .727 | | 27.5 | 50D | 1B | | P | 0415 | 176 | 2.3 | F |
| LEAR | 27 | 0555 | 0555 | 0602 | N11 | W52 | .793 | | 23.3 | 7 | SF | 3 | C | | 16 | | |
| LEAR | 27 | 0917 | 0918 | 0928D | N20 | W64 | .907 | | 22.6 | 11D | SF | 3 | C | | 25 | | |
| WEND | 27 | 0918E | | 0927 | N13 | W52 | .736 | | 23.5 | 9D | SF | | C | 0925 | 20 | .3 | |
| HOLL | 27 | 1627 | 1629 | 1654 | N14 | W39 | .650 | | 24.8 | 27 | SB | 3 | C | | 123 | | D |
| WEND | 27 | 1628E | 1628 | 1640 | N18 | W30 | .556 | | 25.4 | 12D | SN | | C | 1628 | 38 | .5 | |
| HOLL | 27 | 1758 | 1806 | 1833 | S29 | W25 | .625 | | 25.9 | 35 | SF | 2 | C | | 78 | | |
| MANI | 28 | 0006 | 0008 | 0011D | N12 | W61 | .878 | | 23.4 | 5D | SF | 3 | C | | 30 | | |

# Hα SOLAR FLARES

## MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | CMP. DAY | DURATION — MIN. | IMPORTANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | | | | CONF. | TYPE | TIME — UT | MEAS. AREA Mil. of Disk | CORR. AREA Sq. Deg. | |
| PALE | 28 | 0235 | 0239 | 0343 | S45 | W04 | .724 | | 27.8 | 68 | SF | 2 | C | | 67 | | |
| PALE | 28 | 0240 | 0246 | 0256D | S16 | E30 | .564 | | 30.4 | 16D | SF | 2 | C | | 36 | | D |
| LEAR | 28 | 0535 | 0533 | 0615 | S45 | W04 | .724 | | 27.3 | 40 | SB | 3 | C | | 90 | | |
| WEND | 28 | 1410E | | 1431 | S44 | W09 | .713 | | 27.9 | 21D | SN | | C | 1412 | 100 | 1.4 | |
| HOLL | 28 | 1444E | 1446U | 1538 | S18 | W48 | .777 | | 25.0 | 24D | SF | 3 | C | | 79 | | |
| RAMY | 28 | 1503 | 1508 | 1602 | N15 | W47 | .747 | | 25.1 | 59 | 1B | 3 | C | | 195 | | |
| HOLL | 28 | 1504 | 1508 | 1555 | N17 | W47 | .752 | | 25.1 | 51 | 1B | 3 | C | | 196 | | |
| BIGB | 28 | 1504 | 1508 | 1553 | N14 | W48 | .756 | | 25.0 | 55 | 1B | 3 | C | 1508 | 150 | 2.3 | |
| WEND | 28 | 1507 | 1509 | 1525 | N18 | W46 | .745 | | 25.2 | 18 | SB | | C | 1509 | 112 | 1.7 | |
| HOLL | 28 | 1528 | 1532 | 1541 | S45 | W12 | .737 | | 27.7 | 13 | SF | 3 | C | | 66 | | |
| HOLL | 28 | 1715 | 1730 | 1740 | S47 | W14 | .764 | | 27.7 | 25 | SN | 3 | C | | 78 | | |
| PALE | 28 | 1750E | | 1755D | S45 | W12 | .737 | | 27.8 | 5D | SF | 3 | C | | | | |
| PALE | 28 | 1910 | 1928U | 2042 | S43 | W09 | .707 | | 28.1 | 92 | SN | 2 | C | | 105 | | |
| HOLL | 28 | 1916 | 1928 | 2016 | S45 | W13 | .740 | | 27.8 | 60 | SN | 3 | C | | 120 | | |
| PALE | 28 | 2017 | 2024U | 2032 | S19 | W53 | .827 | | 24.9 | 15 | SF | 2 | C | | 24 | | |
| HOLL | 28 | 2021 | 2027 | 2028D | S45 | W12 | .737 | | 27.3 | 7D | SN | 3 | C | | 81 | | |
| HOLL | 28 | 2021 | 2025 | 2028D | S19 | W55 | .845 | | 24.7 | 7D | SF | 3 | C | | 38 | | |
| PALE | 28 | 2048 | 2049 | 2053 | N26 | E61 | .895 | | 3.4 | 5 | SN | 2 | C | | 51 | | |
| PALE | 28 | 2059 | 2101 | 2113 | S12 | E25 | .472 | | 30.7 | 14 | SN | 2 | C | | 102 | | |
| BIGB | 28 | 2059 | 2103 | 2127 | S12 | E25 | .472 | | 30.7 | 28 | SN | 3 | C | 2103 | 90 | 1.0 | |
| HOLL | 28 | 2059 | 2100 | 2117 | S14 | E25 | .486 | | 30.7 | 18 | SN | 3 | C | | 130 | | |
| PALE | 28 | 2117 | 2122 | 2129 | S43 | W11 | .712 | | 28.1 | 12 | SF | 2 | C | | 48 | | |
| HOLL | 28 | 2119 | 2121 | 2143 | S45 | W13 | .740 | | 27.9 | 24 | SN | 3 | C | | 67 | | |
| HOLL | 28 | 2125 | 2127 | 2141 | S19 | W51 | .803 | | 25.1 | 16 | SF | 3 | C | | 25 | | |
| HOLL | 28 | 2154 | 2204 | 2209 | S44 | W13 | .728 | | 27.3 | 15 | SF | 3 | C | | 22 | | |
| HOLL | 28 | 2213 | 2220 | 2225 | N13 | E33 | .563 | | 1.4 | 12 | SF | 3 | C | | 21 | | |
| HOLL | 28 | 2229 | 2240 | 2245 | S44 | W13 | .728 | | 28.3 | 16 | SF | 3 | C | | 35 | | |
| HOLL | 28 | 2247 | 2247 | 2250D | S45 | W13 | .740 | | 28.0 | 3D | SF | 3 | C | | 26 | | |
| BIGB | 28 | 2331 | 2334 | 2351 | S04 | E78 | .979 | | 4.8 | 20 | SN | 3 | C | 2334 | 70 | | |
| MANI | 28 | 2333E | 2333U | 2340D | N22 | W10 | .383 | | 28.2 | 7D | SF | 3 | C | | 30 | | |
| PALE | 28 | 2333E | 2333 | 2343 | S04 | E77 | .975 | | 4.8 | 1JD | SF | 2 | C | | | | |
| PALE | 28 | 2355 | 0023 | 0038 | S45 | W15 | .745 | | 27.9 | 43 | SN | 2 | C | | 64 | | |
| HOLL | 29 | 0010E | 0010U | 0030D | S44 | W14 | .730 | | 28.0 | 20D | SN | 2 | C | | 83 | | |
| PALE | 29 | 0048 | 0106 | 0127 | S41 | W13 | .692 | | 28.1 | 39 | SF | 2 | C | | 32 | | |
| MANI | 29 | 0132E | 0132U | 0141D | N44 | W16 | .709 | | 27.9 | 9D | SF | 3 | C | | 60 | | |
| PALE | 29 | 0217 | 0228 | 0241 | S43 | W14 | .718 | | 28.0 | 24 | SF | 2 | C | | 66 | | |
| PALE | 29 | 0246 | 0249 | 0352 | S46 | W15 | .755 | | 28.0 | 66 | SF | 2 | C | | 58 | | D |
| ATHN | 29 | 1055E | 1100U | 1105D | N60 | W18 | .870 | | 28.1 | 10D | SB | 3 | C | | 64 | | |
| BIGB | 29 | 1609 | 1613 | 1633 | N16 | W67 | .925 | | 24.6 | 29 | SF | 3 | C | 1613 | 60 | | |
| HOLL | 29 | 1806 | 1808 | 1823 | N16 | W63 | .897 | | 25.0 | 14 | SN | 3 | C | | 22 | | |
| HOLL | 29 | 1808 | 1840 | 1920 | S44 | W24 | .766 | | 28.0 | 72 | SB | 3 | C | | 62 | | |
| PALE | 29 | 1823 | 1832U | 1303 | S43 | W22 | .748 | | 28.1 | 40 | SF | 2 | C | | 40 | | D |
| HOLL | 29 | 1913 | 1917 | 1940 | N22 | W16 | .439 | | 28.6 | 27 | SN | 3 | C | | 145 | | |
| BIGB | 29 | 1913 | 1916 | 1935 | N24 | W15 | .455 | | 28.7 | 22 | SN | 3 | C | 1916 | 80 | .9 | |
| HOLL | 29 | 1941 | 2001 | 2027 | S44 | W24 | .766 | | 28.0 | 46 | SN | 3 | C | | 44 | | |
| HOLL | 29 | 2116 | 2118 | 2123 | N21 | W17 | .436 | | 28.6 | 7 | SN | 3 | C | | 29 | | |
| BIGB | 29 | 2200 | 2206 | 2228 | N15 | W64 | .904 | | 25.1 | 28 | SF | 3 | C | 2206 | 70 | 1.6 | |
| PALE | 29 | 2255E | 2256U | 2321D | S17 | W43 | .721 | | 26.7 | 26D | SN | 3 | C | | 134 | | |
| BIGB | 29 | 2256 | 2257 | 2322 | S18 | W44 | .735 | | 26.7 | 26 | SF | 3 | C | 2257 | 80 | 1.1 | |
| HOLL | 29 | 2305 | 2315 | 2357 | S46 | W30 | .810 | | 27.7 | 52 | SB | 3 | C | | 124 | | D |
| BIGB | 29 | 2306 | 2315 | 2342 | S47 | W27 | .805 | | 27.3 | 36 | SN | 3 | C | 2315 | 90 | 1.0 | |
| PALE | 29 | 2306E | 2316U | 2323D | S45 | W28 | .792 | | 27.9 | 17D | 1N | 3 | C | | 206 | | D |
| MANI | 29 | 2308E | 2317U | 2322D | S44 | W28 | .784 | | 27.9 | 14D | SN | 3 | C | | 125 | | |
| PALE | 29 | 2318E | 2319U | 2335D | N14 | W72 | .952 | | 24.6 | 17D | SF | 3 | C | | | | |
| HOLL | 29 | 2318 | 2321 | 2341 | N13 | W71 | .947 | | 24.6 | 23 | SN | 3 | C | | | | |
| BIGB | 29 | 2319 | 2321 | 2348 | N14 | W61 | .880 | | 25.4 | 23 | SN | 3 | C | 2321 | 70 | 1.5 | |
| PALE | 29 | 2348E | 3020U | 3037D | S15 | W45 | .735 | | 26.6 | 49D | SF | 3 | C | | 40 | | |
| HOLL | 29 | 2349 | 2352 | 0011 | N18 | W63 | .899 | | 25.3 | 22 | SN | 3 | C | | 43 | | |
| PALE | 29 | 2351E | 0039U | 0342D | N11 | W73 | .957 | | 24.5 | 231D | 1N | 3 | C | | | | D |
| BIGB | 30 | 0017 | 0047 | 0100D | N10 | W72 | .952 | | 24.6 | 43D | 1B | 3 | C | 0047 | 190 | | |
| HOLL | 30 | 3017 | 3035 | 3139D | N17 | W72 | .954 | | 24.6 | 52D | 1N | 3 | C | | | | |
| LEAR | 30 | 0021E | 0049 | 0228 | N13 | W74 | .962 | | 24.5 | 127D | 2N | 3 | C | | | | |
| PALE | 30 | 0036E | 0036U | 0049D | S43 | W24 | .755 | | 28.2 | 13D | SF | 3 | C | | 25 | | |
| HOLL | 30 | 0054 | 0058 | 0103D | S43 | W27 | .769 | | 28.0 | 15D | SF | 3 | C | | 28 | | |
| PALE | 30 | 0108E | 0121U | 0139D | S41 | W24 | .736 | | 28.2 | 31D | SF | 3 | C | | 44 | | |
| LEAR | 30 | 3113 | 3122 | 3133 | S44 | W28 | .783 | | 28.0 | 20 | SN | 3 | C | | 34 | | |
| LEAR | 30 | 0152 | 0156 | 0218 | N25 | E49 | .798 | | 3.8 | 26 | SN | 3 | C | | 65 | | |
| LEAR | 30 | 0304 | 0306 | 0312 | S13 | W70 | .348 | | 24.9 | 8 | SF | 3 | C | | 22 | | |
| PALE | 30 | 0327E | 0327U | 0343D | S18 | W68 | .937 | | 25.0 | 16D | SF | 3 | C | | 14 | | |
| LEAR | 30 | 3327 | 3332 | 3359 | N14 | E56 | .837 | | 4.3 | 32 | SF | 3 | C | | 34 | | |

# Hα SOLAR FLARES

## MARCH 1981

| OBSERV-ATORY | OBSERVED UT | | | | LOCATION | | | | | DURA-TION | IM-POR-TANCE | OBS. | | MEASUREMENTS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | START | MAX. PHASE | END | APPROX. LAT. | APPROX. MER. DIST. | CENTRAL DISTANCE | HALE PLAGE REGION | CMR DAY | MIN. | | COND. | TYPE | TIME UT | MEAS. AREA Mill. of Disk | CORR. AREA Sq. Deg. | |
| PALE | 30 | 0328E | 0329D | 0342 | N14 | E57 | .846 | | 4.4 | 10 | SF | 3 | C | | 93 | | |
| PALE | 30 | 0328E | 0328U | 0329D | S43 | W28 | .774 | | 28.0 | 31D | SF | 3 | C | | 63 | | |
| LEAR | 30 | 0358 | 0359 | 0403 | S43 | W28 | .774 | | 28.1 | 5 | SN | 3 | C | | 21 | | |
| LEAR | 30 | 0426 | 0426 | 0430 | S43 | W28 | .774 | | 28.1 | 4 | SN | 3 | C | | 31 | | |
| MANI | 30 | 0427E | 0427U | 0432D | S44 | W29 | .787 | | 28.0 | 5D | SF | 3 | C | | 20 | | |
| LEAR | 30 | 0614 | 0615 | 0623 | S42 | W30 | .776 | | 28.0 | 15 | SF | 3 | C | | 23 | | |
| LEAR | 30 | 0652 | 0656 | 0712 | S46 | W32 | .817 | | 27.9 | 20 | SN | 3 | C | | 71 | | |
| LEAR | 30 | 0722 | 0728 | 0731 | N21 | W23 | .501 | | 28.6 | 9 | SF | 3 | C | | 26 | | |
| BUCA | 30 | 0832 | | 0855 | S44 | W31 | .797 | | 28.0 | 23 | 1F | | V | | | | |
| BUCA | 30 | 0835 | | 0842 | S13 | E43 | .772 | | 4.0 | 7 | SN | | V | | | | |
| BUCA | 30 | 0850 | | 0858 | S40 | W30 | .753 | | 28.1 | 8 | SN | | V | | | | |
| BUCA | 30 | 0904 | | 0920 | S42 | W31 | .781 | | 28.1 | 16 | 1F | | V | | | | |
| RAMY | 30 | 1251E | 1251U | 1259 | N20 | W23 | .491 | | 28.8 | 8D | SN | 3 | C | | 28 | | |
| RAMY | 30 | 1252 | 1255 | 1300 | N14 | W78 | .979 | | 24.7 | 8 | 1N | 3 | C | | | | |
| HOLL | 30 | 1407E | 1408 | 1414 | S44 | W35 | .817 | | 28.0 | 7D | SF | 2 | C | | 51 | | |
| HOLL | 30 | 1415 | 1422 | 1440 | S46 | W37 | .841 | | 27.8 | 25 | SF | 2 | C | | 32 | | |
| HOLL | 30 | 1433 | 1434 | 1454 | N13 | E48 | .755 | | 4.2 | 21 | SF | 2 | C | | 33 | | |
| HOLL | 30 | 1642 | 1642 | 1701 | S45 | W37 | .834 | | 27.9 | 19 | SN | 3 | C | | 53 | | |
| BIGB | 30 | 1824 | 1826 | 1319 | N12 | W30 | 1.000 | | 24.0 | 55 | 1N | 3 | C | 1826 | 70 | | |
| HOLL | 30 | 1935 | 1956 | 2006 | S43 | W37 | .821 | | 28.0 | 31 | SN | 3 | C | | 63 | | |
| BIGB | 30 | 2220 | 2222 | 2239 | N22 | W30 | .587 | | 28.7 | 19 | SN | 3 | C | 2222 | 40 | .8 | |
| HOLL | 30 | 2221E | 2221U | 2230 | S43 | W38 | .826 | | 28.1 | 9D | SF | 3 | C | | 31 | | |
| HOLL | 30 | 2221E | 2225 | 2236 | N22 | W30 | .587 | | 28.7 | 15D | SN | 3 | C | | 41 | | |
| HOLL | 30 | 2241 | 2303 | 2332 | S44 | W40 | .843 | | 27.9 | 51 | SN | 2 | C | | 75 | | |
| BIGB | 30 | 2302 | 2306 | 2332 | S46 | W36 | .836 | | 28.3 | 30 | SN | 3 | C | 2306 | 60 | .8 | |
| PALE | 30 | 2306E | 2316U | 0019D | S45 | W28 | .791 | | 28.9 | 73D | 1N | 3 | C | | 206 | | D |
| PALE | 30 | 2348E | 0020U | 0037D | S15 | W45 | .735 | | 27.6 | 49D | SF | 3 | C | | 40 | | |
| HOLL | 30 | 2349 | 2352 | 0011 | N18 | W63 | .833 | | 26.3 | 22 | SN | 3 | C | | 43 | | |
| PALE | 30 | 2351E | 0023U | 0031D | N11 | W73 | .957 | | 25.5 | 40D | 1N | 3 | C | | | | D |
| LEAR | 31 | 0024 | 0025 | 0034D | N21 | W35 | .638 | | 28.4 | 10D | SF | 3 | C | | 30 | | |
| LEAR | 31 | 0118 | 0122 | 0133 | N11 | E44 | .705 | | 4.4 | 15 | SF | 2 | C | | 56 | | |
| MANI | 31 | 0354E | 0354U | 0402D | S41 | W41 | .823 | | 28.1 | 8D | SF | 3 | C | | 80 | | |
| LEAR | 31 | 0410 | 0419 | 0425 | N22 | W36 | .655 | | 28.5 | 15 | SF | 3 | C | | 25 | | |
| LEAR | 31 | 0643 | 0642 | 0707 | S43 | W41 | .841 | | 28.2 | 27 | SN | 3 | C | | 45 | | |
| BUCA | 31 | 0803 | | 0818 | N06 | E38 | .619 | | 4.2 | 15 | 1N | | V | | | | |
| ATHN | 31 | 1300E | 1305U | 1310 | S42 | W43 | .846 | | 28.3 | 10D | SN | 2 | C | | 95 | | |
| RAMY | 31 | 1303 | 1303 | 1310 | S44 | W47 | .878 | | 28.0 | 7 | 1B | 3 | C | | 222 | | |
| HOLL | 31 | 1358E | 1413 | 1417 | N02 | E34 | .559 | | 4.1 | 19D | SF | 2 | C | | 72 | | |
| HOLL | 31 | 1358E | 1420 | 1420D | S44 | W47 | .878 | | 28.1 | 22D | 1N | 3 | C | | 153 | | |
| RAMY | 31 | 1426 | 1427 | 1432D | S43 | W46 | .868 | | 28.2 | 60 | 2N | 3 | C | | 520 | | |
| RAMY | 31 | 1435 | 1436 | 1445 | N13 | E35 | .538 | | 4.2 | 10 | SF | 3 | C | | 47 | | |
| HOLL | 31 | 1436 | 1436 | 1443 | N13 | E37 | .624 | | 4.4 | 7 | SF | 3 | C | | 30 | | |
| RAMY | 31 | 1538 | 1540 | 1641 | N20 | W40 | .689 | | 28.7 | 63 | SB | 3 | C | | 99 | | |
| BIGB | 31 | 1538 | 1540 | 1550 | N21 | W40 | .693 | | 28.7 | 12 | SF | 3 | C | 1540 | 60 | .8 | |
| HOLL | 31 | 1643 | 1643 | 1650 | S43 | W47 | .873 | | 28.2 | 7 | SF | 3 | C | | 22 | | |
| RAMY | 31 | 1644 | 1703 | 1710 | S44 | W47 | .878 | | 28.2 | 26 | 1B | 3 | C | | 222 | | |
| RAMY | 31 | 1653 | 1655 | 1702 | N14 | E35 | .602 | | 4.3 | 9 | SF | 3 | C | | 35 | | |
| HOLL | 31 | 1800 | 1830 | 1926 | S44 | W51 | .897 | | 27.9 | 86 | SF | 3 | C | | 44 | | |
| BIGB | 31 | 1857 | 1905 | 1919 | N04 | E87 | .999 | | 8.3 | 22 | 1N | 3 | C | 1905 | 70 | | |
| PALE | 31 | 1907E | 1909 | 1953D | S43 | W49 | .883 | | 28.1 | 46D | SF | 3 | C | | 48 | | |
| HOLL | 31 | 1927 | 2032 | 2059 | S43 | W49 | .883 | | 28.1 | 92 | SN | 3 | C | | 39 | | |
| BIGB | 31 | 2021 | 2027 | 2139 | N06 | E30 | .505 | | 4.1 | 48 | SN | 3 | C | 2027 | 100 | 1.2 | |
| RAMY | 31 | 2021 | 2024 | 2050 | N06 | E30 | .505 | | 4.1 | 29 | SN | 3 | C | | 149 | | |
| HOLL | 31 | 2021 | 2026 | 2046 | N05 | E30 | .503 | | 4.1 | 25 | SN | 3 | C | | 183 | | |
| HOLL | 31 | 2023 | 2028 | 2041 | N06 | E30 | .505 | | 4.1 | 15 | SF | 3 | C | | 25 | | |
| PALE | 31 | 2026E | 2028U | 2048 | N35 | E29 | .488 | | 4.0 | 22D | SN | 3 | C | | 176 | | |
| HOLL | 31 | 2135 | 2136 | 2140 | S44 | W51 | .897 | | 28.1 | 5 | SB | 3 | C | | 63 | | |
| BIGB | 31 | 2220 | 2223 | 2240 | S16 | E79 | .984 | | 7.9 | 20 | 1N | 3 | C | 2223 | 60 | | |

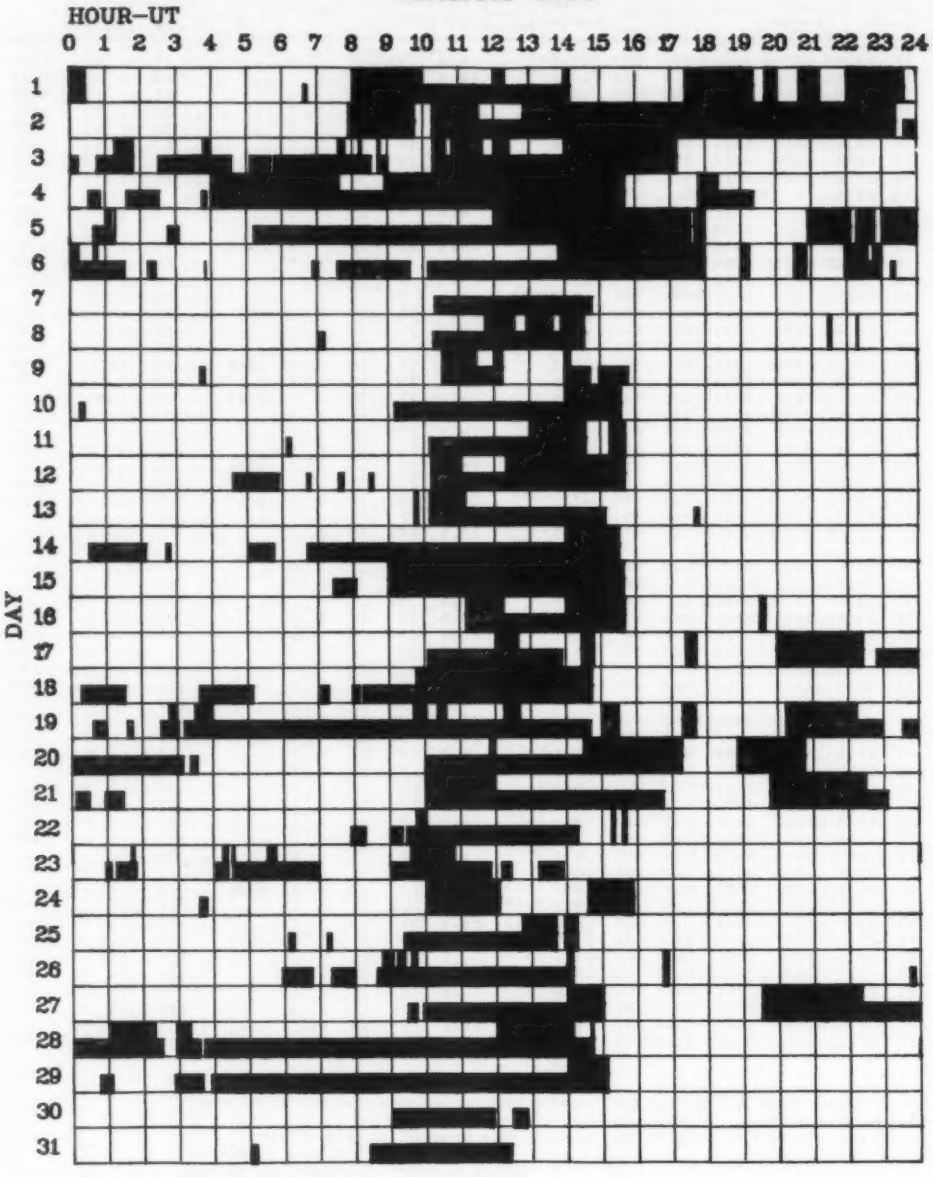
"REMARKS":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

# INTERVALS OF NO FLARE PATROL OBSERVATION

## FOR PRECEDING SOLAR FLARE TABLE

## MARCH 1981

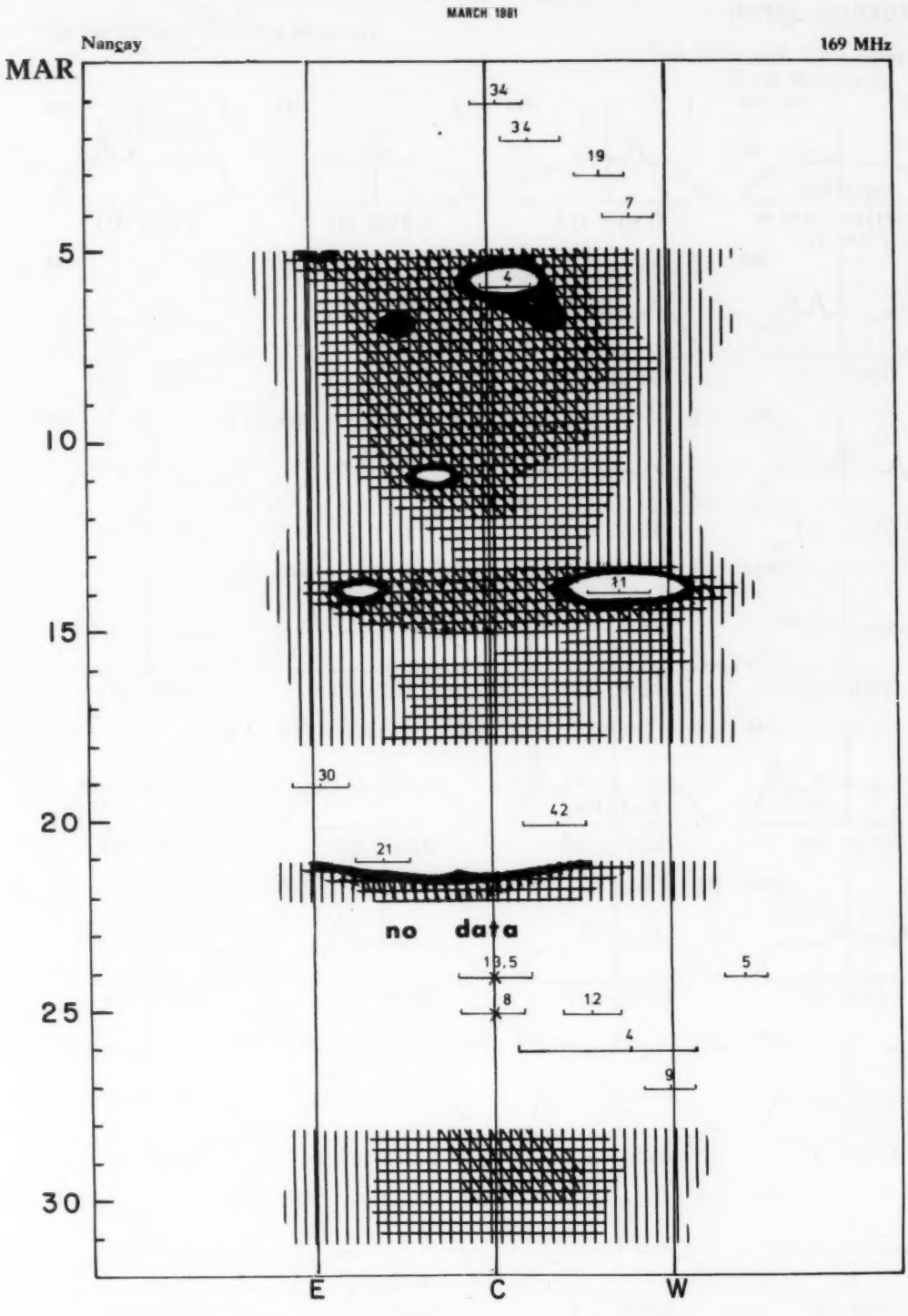



Observatories included in total patrol:

| | | | | |
|---|---|---|---|---|
| Athens | Bucharest | Istanbul | Manila | Peking |
| Big Bear | Holloman | Learmonth | Palehua | Ramey |
| | | | | Wendelstein |

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

# SOLAR RADIO EMISSION
# INTERFEROMETRIC OBSERVATION

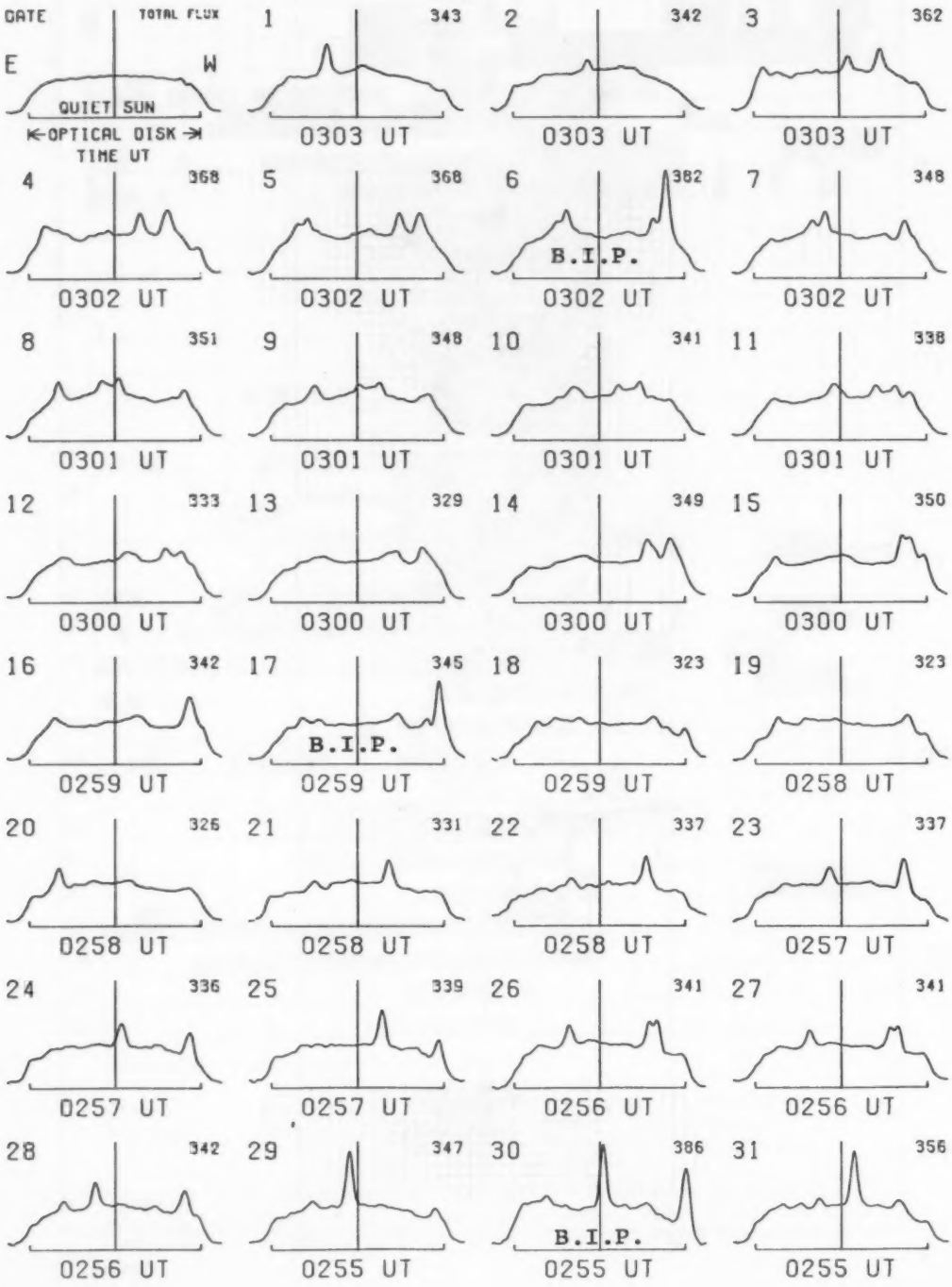


# EAST-WEST SOLAR SCANS

## MARCH 1981

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

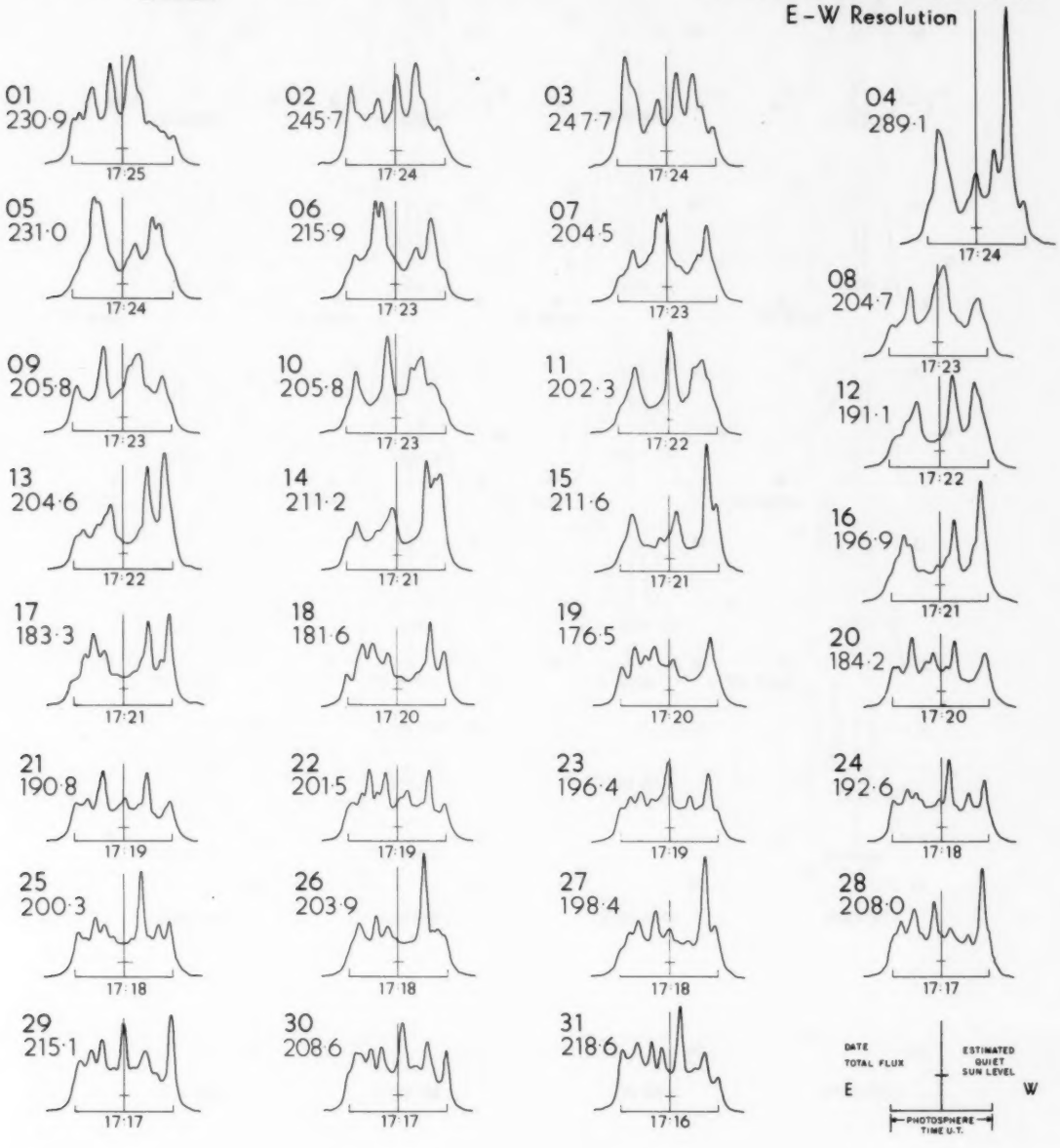


# EAST-WEST SOLAR SCANS

## MARCH 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

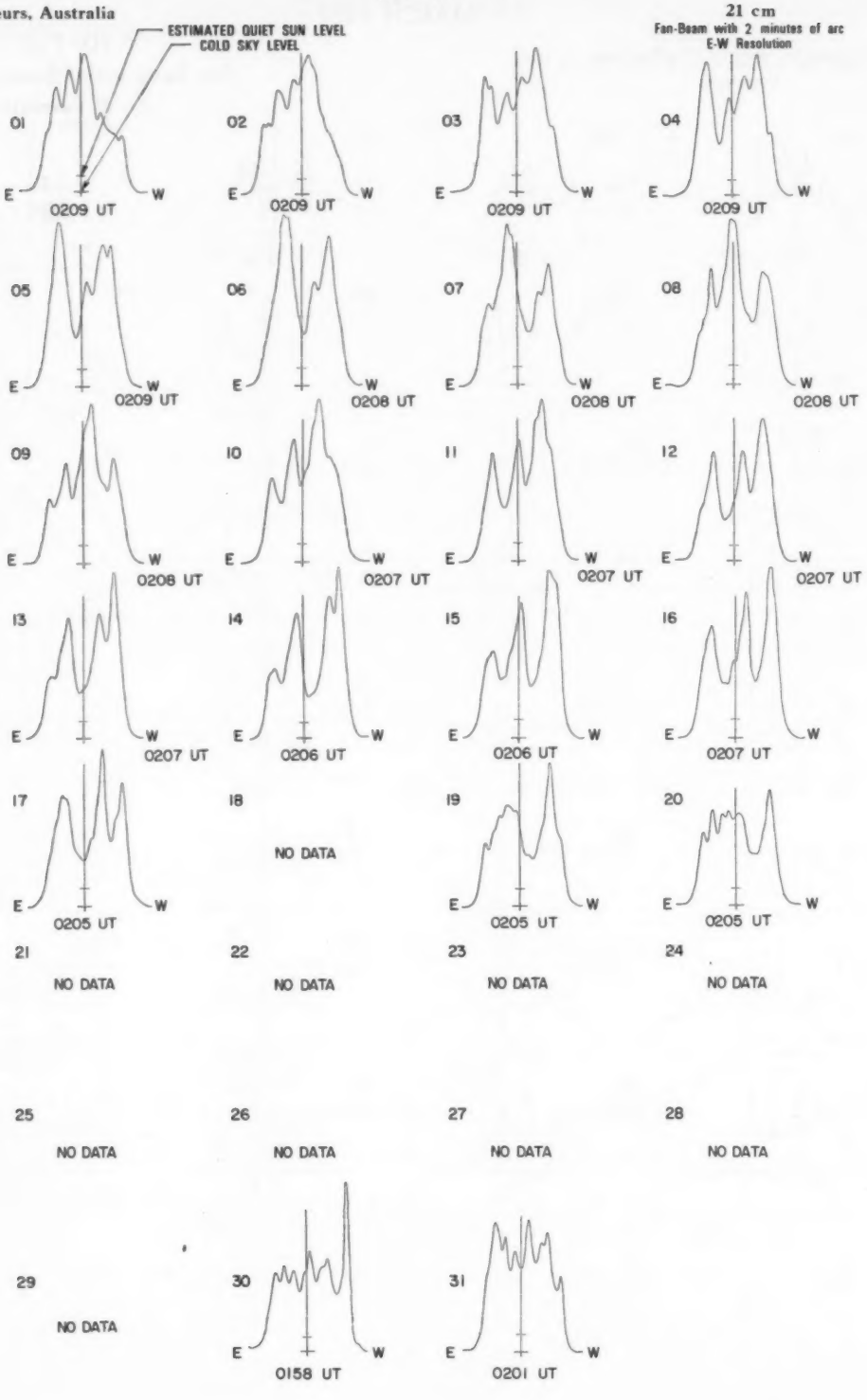


# EAST-WEST SOLAR SCANS

MARCH 1981

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

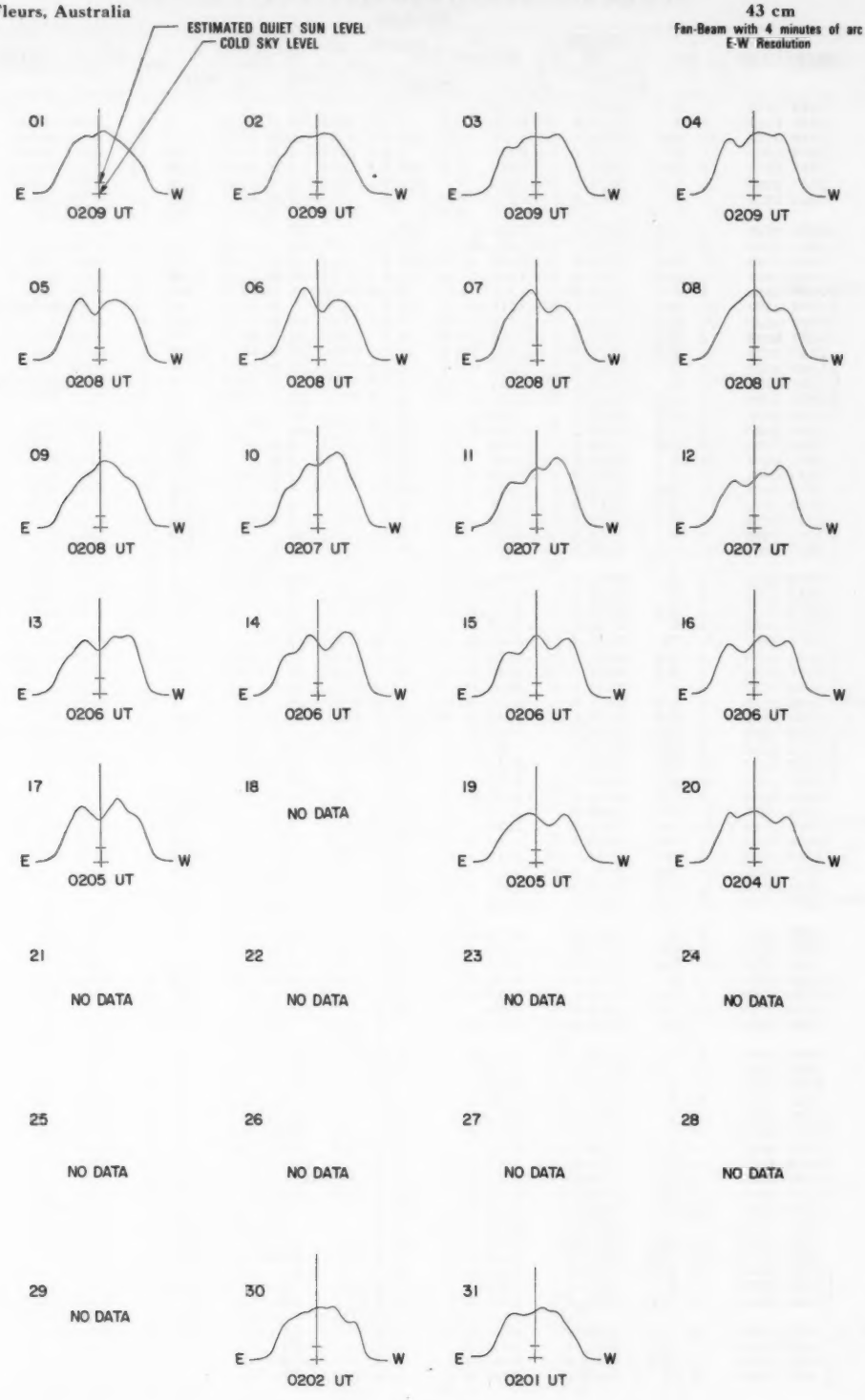


# EAST-WEST SOLAR SCANS

MARCH 1981

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS

MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME | TIME OF MAXIMUM | DURATION | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ | | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UT | UT | MINUTES | PEAK | MEAN | | |
| 01 | 8800 | LEAR | 8 S | 0100.1 | 0100.3 | 1.2 | 11 | | | |
| | 8800 | LEAR | 8 S | 0114.8 | 0115.3 | 1.7 | 16 | | | |
| | 2800 | OTTA | 23 GRF | 1430.0 | 1500 | 200.0 | 5.6 | | | |
| | 2800 | OTTA | 1 S | 1728.0 | 1729 | 2.0 | 2.4 | 1.8 | | |
| | 2800 | OTTA | 20 GRF | 1910.0 | 1945 | 140.0 | 3.8 | 2.0 | | |
| | 2695 | PENT | 21 GRF | 2035.0 | 2227 | 205.0 | 4.4 | 1.8 | | |
| | 2800 | OTTA | 1 S | 2207.0 | 2211 | 8.0 | 5.8 | 2.6 | | |
| 02 | 8800 | ATHN | 4 S/F | 1224.1 | 1224.6 | 29.5 | 25 | | | |
| | 2695 | ATHN | 4 S/F | 1224.3 | 1231.8 | 23.0D | 08 | | | |
| | 2800 | OTTA | 23 GRF | 1300.0 | 1550 | 415.0 | 19.2 | | | |
| | 2800 | OTTA | 4 S/F | 1309.0 | 1316.2 | 13.0 | 45.0 | 15.6 | | |
| | 2695 | SGMR | 4 S/F | 1310.0 | 1316.1 | 11.1D | 71 | | | |
| | 3200 | BERN | 22 GRF | 1310.1 | 1316.0 | 30.0 | .0 | | | ONLY PAPER REC |
| | 8400 | BERN | 22 GRF | 1310.1 | 1316.4 | 27.0 | 36.0 | | | |
| | 8800 | SGMR | 4 S/F | 1312.6 | 1316.0 | 6.7 | 24 | | | |
| | 2800 | OTTA | 4 S/F | 1325.7 | 1326.3 | 2.0 | 26.0 | 12.0 | | |
| | 8400 | BERN | 3 S | 1432.2 | 1433.4 | 2.0 | 70.0 | | | |
| | 3200 | BERN | 3 S | 1432.2 | 1433.3 | 3.5 | .0 | | | ONLY PAPER REC |
| | 8800 | ATHN | 4 S/F | 1432.5 | 1433.3 | 4.8 | 63 | | | |
| | 2695 | ATHN | 4 S/F | 1433.1 | 1433.6 | 2.2D | 04 | | | |
| | 2695 | SGMR | 4 S/F | 1839.1 | 1844.0 | 20.9 | 06 | | | |
| | 2800 | OTTA | 20 GRF | 1840.0 | 1850 | 50.0 | 8.6 | 4.3 | | |
| | 2800 | OTTA | 24OAR | 2010.0 | 2100 | 50.0 | 7.6 | 3.8 | | |
| | 2800 | OTTA | 1 S | 2050.0 | 2050.7 | 2.0 | 2.4 | 1.2 | | |
| | 2800 | OTTA | 21 GRF | 2115.0 | 2123 | 65.0 | 7.0 | 3.5 | | |
| | 2800 | OTTA | 1 S | 2117.0 | 2118 | 4.3 | 5.6 | 2.8 | | |
| | 2800 | OTTA | 1 S | 2129.0 | 2130 | 2.0 | 2.4 | 1.2 | | |
| | 2695 | PENT | 3 S | 2234.0 | 2235 | 3.0 | 50.0 | 12.5 | | |
| | 2695 | PENT | 29 PBI | 2237.0 | 2237 | 40.0 | 7.6 | 3.8 | | |
| 03 | 8800 | LEAR | 8 S | 0334.8 | 0335.3 | 1.0 | 70 | | | |
| | 8800 | LEAR | 8 S | 0515.1 | 0515.6 | 1.7 | 73 | | | |
| | 8800 | LEAR | 4 S/F | 0529.3 | 0531.8 | 7.2 | 29 | | | |
| | 2695 | LEAR | 8 S | 0531.6 | 0532.8 | .2 | 13 | | | |
| | 2695 | MANI | 47 GB | 0626.0 | 0702.3 | 73.0D | 180 | | | |
| | 8800 | ATHN | 4 S/F | 0627.6 | 0629.1 | 3.2 | 32 | | | |
| | 8800 | MANI | 4 S/F | 0628.3 | 0628.8 | 56.7 | 29 | | | |
| | 8800 | LEAR | 8 S | 0628.8 | 0629.1 | .3 | 22 | | | |
| | 2695 | ATHN | 4 S/F | 0633.1 | 0636.6 | 5.9D | 110 | | | |
| | 8800 | ATHN | 4 S/F | 0633.1 | 0638.1 | 12.2 | 26 | | | |
| | 3200 | BERN | 20 GRF | 0650.0 | 0702.5 | 60.0 | .0 | | | ONLY PAPER REC |
| | 2695 | ATHN | 4 S/F | 0650.1 | 0702.0 | 55.0D | 320 | | | |
| | 8800 | LEAR | 47 GB | 0652.1 | 0702.3 | 37.9 | 53 | | | |
| | 2695 | LEAR | 47 GB | 0653.3 | 0702.3 | 46.7 | 210 | | | |
| | 8800 | ATHN | 4 S/F | 0654.8 | 0707.0 | 51.0 | 31 | | | |
| | 2800 | OTTA | 23 GRF | 1240.0 | 1335 | 235.0 | 30.0 | 18.8 | | |
| | 2800 | OTTA | 20 GRF | 1515.0 | 1520 | 17.0 | 5.2 | 2.4 | | |
| | 2800 | OTTA | 21 GRF | 1640.0 | 1700 | 70.0 | 4.6 | 2.3 | | |
| | 2800 | OTTA | 4 S/F | 1730.5 | 1731.2 | 1.5 | 21.6 | 7.0 | | |
| | 2800 | OTTA | 29 PBI | 1732.0 | 1732 | 8.0 | 3.4 | 1.7 | | |
| | 2800 | OTTA | 22 GRF | 1915.0 | 1952 | 145.0 | 5.6 | | | |
| | 2695 | PENT | 20 GRF | 2250.0 | 2320 | 85.0 | 4.4 | 2.4 | | |
| 04 | 8800 | LEAR | 8 S | 0031.0 | 0031.1 | .6 | 15 | | | |
| | 2800 | OTTA | 22 GRF | 1310.0 | 1420 | 175.0 | 8.0 | | | |
| | 2800 | OTTA | 21 GRF | 1640.0 | 1745 | 140.0 | 14.8 | 7.4 | | |
| | 2800 | OTTA | 3 S | 1719.0 | 1724.2 | 23.0 | 30.0 | 12.0 | | |
| | 8800 | SGMR | 4 S/F | 1719.1 | 1725.1 | 15.9 | 45 | | | |
| | 2800 | OTTA | 260 FAL | 1910.0 | 2000 | 50.0 | -5.0 | -2.5 | | |
| | 2800 | OTTA | 1 S | 2018.0 | 2018.7 | 1.0 | 3.6 | 1.6 | | |
| 05 | 8800 | LEAR | 8 S | 0150.0 | 0151.1 | 1.0 | 100 | | | |
| | 8800 | LEAR | 4 S/F | 0156.0 | 0158.8 | 6.0 | 23 | | | |
| | 8800 | LEAR | 8 S | 0423.8 | 0424.1 | 1.2 | 33 | | | |
| | 2695 | LEAR | 8 S | 0634.8 | 0635.1 | .3 | 17 | | | |
| | 8400 | BERN | 3 S | 0707.8 | 0711.6 | 12.0 | 119.0 | | | |
| | 3200 | BERN | 3 S | 0708.5 | 0712.0 | 15.0 | 88.0 | | | |
| | 2695 | MANI | 4 S/F | 0708.6 | 0711.5 | 8.7D | 98 | | | |
| | 8800 | MANI | 4 S/F | 0709.0 | 0711.1 | 7.5 | 119 | | | |
| | 8800 | LEAR | 4 S/F | 0710.0 | 0711.6 | 11.8 | 119 | | | |
| | 2695 | LEAR | 4 S/F | 0710.1 | 0712.0 | 11.0 | 119 | | | |
| | 2800 | OTTA | 260 FAL | 1800.0 | 1820 | 20.0 | -3.4 | -1.7 | | |
| | 2800 | OTTA | 1 S | 2036.0 | 2036.3 | 1.0 | 4.8 | 1.4 | | |
| | 2800 | OTTA | 21 GRF | 2045.0 | 2200 | 240.0 | 21.6 | 10.8 | | |
| | 2800 | OTTA | 21 GRF | 2100.0 | 2120 | 45.0 | 18.0 | 12.2 | | |
| | 2695 | PALE | 4 S/F | 2102.8 | 2111.3 | 26.2 | 28 | | | |
| | 2800 | OTTA | 1 S | 2102.8 | 2103.2 | 1.0 | 5.2 | 3.4 | | |
| | 8800 | PALE | 4 S/F | 2103.0 | 2116.6 | 26.0 | 38 | | | |
| 06 | 8800 | LEAR | 4 S/F | 0140.0 | 0141.1 | 4.0 | 22 | | | |
| | 8800 | LEAR | 4 S/F | 0157.6 | 0159.5 | 2.9 | 20 | | | |
| | 8800 | LEAR | 4 S/F | 0202.6 | 0205.3 | 5.8 | 130 | | | |
| | 2695 | LEAR | 8 S | 0204.1 | 0205.3 | 1.4 | 13 | | | |

# SOLAR RADIO EMISSION
# SELECTED FIXED FREQUENCY EVENTS

MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME | TIME OF MAXIMUM | DURATION | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ | | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UT | UT | MINUTES | PEAK | MEAN | | |
| 06 | 8800 | PALE | 8 S | 0204.5 | 0205.3 | 1.6 | 110 | | | |
| | 8800 | LEAR | 8 S | 0235.6 | 0236.3 | 1.5 | 18 | | | |
| | 8800 | LEAR | 47 GB | 0240.6 | 0245.6 | 12.7 | 82 | | | |
| | 2695 | LEAR | 47 GB | 0241.0 | 0245.3 | 4.3 | 11 | | | |
| | 8800 | PALE | 8 S | 0245.1 | 0245.6 | .5 | 30 | | | |
| | 2800 | OTTA | 22 GRF | 1930.0 | | 110.0 | 4.6 | | | |
| | 2695 | PENT | 20 GRF | 2125.0 | 2225 | 135.0 | 5.2 | 3.9 | | |
| 07 | 2695 | MANI | 47 GB | 0612.1 | 0621.0 | 34.7D | 160 | | | |
| | 2695 | ATHN | 4 S/F | 0613.3 | 0621.3 | 28.2D | 130 | | | |
| | 2695 | LEAR | 47 GB | 0613.6 | 0621.1 | 38.9 | 170 | | | |
| | 3200 | BERN | 22 GRF | 0614.0 | 0620.3 | 35.0 | .0 | | | ONLY PAPER REC |
| | 8800 | LEAR | 47 GB | 0619.5 | 0632.3 | 41.3 | 55 | | | |
| | 8800 | ATHN | 4 S/F | 0619.8 | 0623.1 | 19.8 | 27 | | | |
| | 2800 | OTTA | 21 GRF | 1740.0 | 1805 | 60.0 | 3.2 | 1.6 | | |
| | 2800 | OTTA | 2 S/F | 1802.9 | 1803 | 1.0 | 2.0 | 1.0 | | |
| | 2695 | PENT | 2 S/F | 2248.0 | 2248.8 | 2.0 | 8.0 | 2.8 | | |
| | 2695 | PALE | 8 S | 2248.5 | 2248.6 | 1.1 | 13 | | | |
| | 8800 | PALE | 8 S | 2248.5 | 2248.6 | 1.3 | 19 | | | |
| 08 | 2695 | LEAR | 4 S/F | 0208.1 | 0209.0 | 2.2 | 10 | | | |
| | 2695 | LEAR | 4 S/F | 0740.5 | 0745.3 | 5.3 | 13 | | | |
| | 2800 | OTTA | 20 GRF | 1255.0 | 1305 | 87.0 | 3.0 | | | |
| | 2800 | OTTA | 20 GRF | 1427.0 | 1435 | 83.0 | 3.4 | 2.0 | | |
| | 2800 | OTTA | 23 GRF | 1620.0 | 1645 | 90.0 | 4.2 | 2.1 | | |
| | 2800 | OTTA | 8 S | 1721.0 | 1721.3 | .7 | 2.2 | 1.1 | | |
| | 2800 | OTTA | 21 GRF | 1850.0 | 1900 | 55.0 | 4.2 | 2.1 | | |
| | 8800 | SGMR | 4 S/F | 1910.1 | 1911.1 | 2.9 | 13 | | | |
| | 2695 | SGMR | 4 S/F | 1910.3 | 1911.1 | 2.5D | 06 | | | |
| | 8800 | PALE | 8 S | 1910.6 | 1911.1 | 1.5 | 29 | | | |
| | 2800 | OTTA | 1 S | 1910.7 | 1911 | 1.8 | 3.4 | 1.7 | | |
| | 2800 | OTTA | 2 S/F | 2043.5 | 2044.1 | 1.5 | 4.2 | | | |
| | 2800 | OTTA | 20 GRF | 2110.0 | 2120 | 20.0 | 2.2 | 1.1 | | |
| 09 | 2695 | ATHN | 8 S | 0611.5 | 0612.1 | 1.8D | 21 | | | |
| | 8800 | LEAR | 8 S | 0611.8 | 0612.3 | 1.7 | 11 | | | |
| | 8800 | ATHN | 8 S | 0612.1 | 0612.6 | 1.7 | 07 | | | |
| | 2695 | LEAR | 8 S | 0612.1 | 0612.1 | .2 | 16 | | | |
| | 3200 | BERN | 3 S | 1102.8 | 1103.3 | 10.0 | .0 | | | ONLY PAPER REC |
| | 2800 | OTTA | 21 GRF | 1835.0 | 1930 | 260.0 | 18.4 | 8.8 | | |
| | 2800 | OTTA | 1 S | 1837.0 | 1839 | 4.0 | 6.2 | 3.1 | | |
| | 2800 | OTTA | 1 S | 1846.5 | 1849.6 | 6.5 | 6.6 | 3.4 | | |
| | 2800 | OTTA | 1 S | 2157.8 | 2158.4 | 1.5 | 3.6 | 1.4 | | |
| 10 | 2695 | MANI | 4 S/F | 0020.0 | 0021.5 | 11.6D | 06 | | | |
| | 2695 | MANI | 4 S/F | 0830.5 | 0832.0 | 4.1D | 45 | | | |
| | 3200 | BERN | 3 S | 0831.1 | 0832.5 | 28.0 | .0 | | | ONLY PAPER REC |
| | 2695 | ATHN | 4 S/F | 0831.5 | 0832.6 | 12.0D | 35 | | | |
| | 8800 | ATHN | 4 S/F | 0831.8 | 0832.8 | 9.8 | 06 | | | |
| | 2695 | LEAR | 8 S | 0832.1 | 0832.5 | 1.4 | 39 | | | |
| | 2800 | OTTA | 1 S | 1340.0 | 1440.5 | 1.2 | 2.2 | 1.1 | | |
| | 3200 | BERN | 3 S | 1341.8 | 1342.3 | 8.0 | .0 | | | ONLY PAPER REC |
| | 2800 | OTTA | 1 S | 1342.3 | 1342.7 | 3.5 | 9.0 | 2.2 | | |
| | 2800 | OTTA | 1 S | 1514.0 | 1514.3 | 1.0 | 2.2 | 1.1 | | |
| | 2800 | OTTA | 1 S | 1610.3 | 1611.3 | 1.5 | 1.8 | .9 | | |
| | 2800 | OTTA | 1 S | 1923.5 | 1924.2 | 1.8 | 1.8 | .9 | | |
| | 2800 | OTTA | 8 S | 2025.8 | 2025.8 | .3 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 20 GRF | 2100.0 | 2115 | 95.0 | 3.6 | 2.9 | | |
| 11 | 2695 | PENT | 4 S/F | 0113.5 | 0113.9 | 2.0 | 18.0 | 6.0 | | |
| | 8800 | LEAR | 8 S | 0113.6 | 0113.8 | .9 | 20 | | | |
| | 2695 | LEAR | 8 S | 0113.6 | 0113.8 | .9 | 15 | | | |
| | 2695 | PALE | 8 S | 0113.6 | 0113.8 | .4 | 24 | | | |
| | 8800 | PALE | 8 S | 0113.6 | 0113.8 | .4 | 25 | | | |
| | 8800 | MANI | 8 S | 0113.8 | 0114.3 | 1.2 | 19 | | | |
| | 2695 | MANI | 8 S | 0113.8 | 0114.1 | 1.3D | 24 | | | |
| | 8800 | LEAR | 8 S | 0254.0 | 0254.8 | .6 | 07 | | | |
| | 2695 | LEAR | 8 S | 0254.0 | 0254.8 | .6 | 13 | | | |
| | 2800 | OTTA | 260 FAL | 1525.0 | 1545 | 80.0 | -6.6 | -3.3 | | |
| | 2800 | OTTA | 20 GRF | 1705.0 | 1712 | 25.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 21 GRF | 1738.0 | 1820 | 77.0 | 4.0 | 2.0 | | |
| | 2800 | OTTA | 8 S | 1801.9 | 1802 | .8 | 2.0 | 1.0 | | |
| | 2800 | OTTA | 20 GRF | 1914.0 | | 12.0 | 2.0 | 1.4 | | |
| | 2800 | OTTA | 2 S/F | 1935.5 | 1936.8 | 2.5 | 3.2 | | | |
| | 2695 | PENT | 20 GRF | 2235.0 | 2244 | 30.0 | 4.0 | 2.0 | | |
| 12 | 2695 | SGMR | 4 S/F | 1746.6 | 1750.1 | 6.7D | 37 | | | |
| | 2695 | PALE | 4 S/F | 1747.0 | 1750.1 | 4.5 | 40 | | | |
| | 2800 | OTTA | 4 S/F | 1747.0 | 1750.2 | 4.3 | 41.0 | | | |
| | 2800 | OTTA | 29 PBI | 1751.3 | 1751.3 | 180.0 | 16.6 | | | |
| 13 | 2800 | OTTA | 1 S | 1333.0 | 1333.5 | 1.0 | 2.4 | 1.2 | | |
| | 2800 | OTTA | 240 R | 1640.0 | 1700 | 20.0 | 4.0 | 3.0 | | |
| | 2800 | OTTA | 21 GRF | 1725.0 | 1820 | 105.0 | 6.0 | 3.0 | | |
| | 2800 | OTTA | 1 S | 1825.0 | 1826 | 6.0 | 4.2 | 2.0 | | |

# SOLAR RADIO EMISSION
# SELECTED FIXED FREQUENCY EVENTS

MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME UT | TIME OF MAXIMUM UT | DURATION MINUTES | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ PEAK | FLUX DENSITY MEAN | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 2800 | OTTA | 1 S | 1831.5 | 1832.8 | 6.0 | 4.2 | 1.6 | | |
| | 2800 | OTTA | 20 GRF | 1920.0 | 1936 | 30.0 | 2.8 | 1.4 | | |
| | 2800 | OTTA | 4 S/F | 2057.0 | 2059 | 6.0 | 305.0 | 84.0 | | |
| | 2695 | PALE | 4 S/F | 2058.1 | 2058.8 | 7.4 | 350 | | | |
| | 8800 | PALE | 4 S/F | 2058.5 | 2058.6 | 7.0 | 130 | | | |
| | 2800 | OTTA | 30 PBI | 2103.0 | 2103 | 240.0 | 33.0 | | | |
| | 2695 | PENT | 1A S | 2235.0 | 2239 | 10.0 | 4.2 | 2.1 | | |
| | 2695 | PENT | 1 S | 2235.2 | 2236.2 | 2.0 | 6.0 | 3.0 | | |
| | 8800 | MANI | 4 S/F | 2310.6 | 2312.3 | 3.0 | 340 | | | |
| | 8800 | LEAR | 47 GB | 2311.1 | 2312.1 | 10.9 | 270 | | | |
| | 2695 | PENT | 21 GRF | 2312.0 | 2325 | 45.0 | 9.0 | 4.5 | | |
| | 2695 | MANI | 47 GB | 2312.0 | 2315.0 | 8.0D | 56 | | | |
| | 8800 | PALE | 47 GB | 2312.8 | 2313.8 | 11.5 | 84 | | | |
| | 2695 | PENT | 45 C | 2314.0 | 2314.9 | 7.0 | 15.0 | 7.0 | | |
| | 2695 | LEAR | 4 S/F | 2314.1 | 2318.8 | 5.9 | 24 | | | |
| | 2695 | PALE | 8 S | 2314.3 | 2314.8 | .7 | 22 | | | |
| 14 | 8800 | LEAR | 47 GB | 0319.1 | 0319.5 | 3.0 | 09 | | | |
| | 8800 | ATHN | 4 S/F | 0507.3 | 0521.8 | 15.5 | 45 | | | |
| | 2695 | ATHN | 4 S/F | 0509.1 | 0521.3 | 20.9D | 35 | | | |
| | 2800 | OTTA | 21 GRF | 1355.0 | | 60.0 | 4.2 | | | |
| | 2695 | ATHN | 4 S/F | 1424.3 | 1427.1 | 9.8D | 13 | | | |
| | 3200 | BERN | 3 S | 1424.5 | 1426.7 | 30.0 | .0 | | | ONLY PAPER REC |
| | 8400 | BERN | 3 S | 1424.5 | 1426.7 | 26.0 | 16.0 | | | ONLY PAPER REC |
| | 2695 | SGMR | 4 S/F | 1424.6 | 1427.1 | 4.2D | 11 | | | |
| | 2800 | OTTA | 1 S | 1425.0 | 1427 | 4.0 | 9.4 | 3.4 | | |
| | 8800 | SGMR | 4 S/F | 1425.0 | 1427.0 | 3.1 | 23 | | | |
| | 8800 | ATHN | 4 S/F | 1425.3 | 1427.1 | 7.5 | 38 | | | |
| | 2800 | OTTA | 20 GRF | 1520.0 | 1610 | 80.0 | 5.0 | 3.7 | | |
| | 2800 | OTTA | 22 GRF | 1846.0 | 1848 | 65.0 | 4.2 | | | |
| | 8800 | PALE | 8 S | 2338.5 | 2338.6 | .3 | 30 | | | |
| | 8800 | LEAR | 8 S | 2338.6 | 2338.6 | .5 | 24 | | | |
| | 8800 | PALE | 4 S/F | 2346.8 | 2348.3 | 10.0 | 210 | | | |
| | 8800 | LEAR | 4 S/F | 2347.0 | 2348.3 | 6.1 | 170 | | | |
| | 8800 | MANI | 4 S/F | 2347.1 | 2348.8 | 8.4 | 200 | | | |
| 15 | 8800 | PALE | 8 S | 0405.1 | 0405.3 | .2 | 20 | | | |
| | 2695 | LEAR | 4 S/F | 0428.1 | 0428.8 | 3.5 | 13 | | | |
| | 8800 | LEAR | 4 S/F | 0442.1 | 0452.6 | 12.9 | 11 | | | |
| | 3200 | BERN | 22 GRF | 0900.0 | 0915.8 | 82.0 | .0 | | | ONLY PAPER REC |
| | 2695 | LEAR | 47 GB | 0912.3 | 0917.1 | 5.0 | 19 | | | |
| | 8800 | LEAR | 47 GB | 0912.3 | 0915.5 | 5.0 | 16 | | | |
| | 2695 | LEAR | 8 S | 0954.3 | 0955.3 | 2.0 | 21 | | | |
| | 2800 | OTTA | 22 GRF | 1340.0 | | 95.0 | 3.4 | | | |
| | 2695 | SGMR | 4 S/F | 1340.8 | 1344.6 | 8.0 | 05 | | | |
| | 8800 | ATHN | 4 S/F | 1401.1 | 1413.3 | 47.2 | 95 | | | |
| | 2695 | SGMR | 4 S/F | 1407.0 | 1415.5 | 11.0 | 04 | | | |
| | 8400 | BERN | 22 GRF | 1407.0 | 1413.0 | 30.0 | 76.0 | | | ONLY PAPER REC |
| | 3200 | BERN | 22 GRF | 1407.0 | 1413.0 | 30.0 | .0 | | | ONLY PAPER REC |
| | 8800 | SGMR | 4 S/F | 1407.3 | 1413.1 | 9.7D | 91 | | | |
| | 2695 | ATHN | 4 S/F | 1408.3 | 1413.3 | 12.3D | 05 | | | |
| | 2800 | OTTA | 23 GRF | 1520.0 | 1550 | 275.0 | 7.6 | | | |
| | 2800 | OTTA | 1 S | 1627.0 | 1631 | 6.0 | 2.2 | 1.1 | | |
| | 2800 | OTTA | 1 S | 1828.2 | 1828.5 | 1.0 | 3.4 | 1.7 | | |
| | 2800 | OTTA | 1 S | 2138.8 | 2139.1 | 2.0 | 4.2 | 1.6 | | |
| 16 | 8800 | PALE | 4 S/F | 0148.8 | 0150.1 | 2.8 | 37 | | | |
| | 8800 | LEAR | 8 S | 0149.8 | 0150.1 | 2.0 | 30 | | | |
| | 8800 | MANI | 47 GB | 0535.0 | 0537.0 | 9.0 | 500 | | | |
| | 8800 | ATHN | 47 GB | 0535.3 | 0536.8 | 21.2 | 540 | | | |
| | 2695 | ATHN | 4 S/F | 0535.3 | 0536.8 | 21.2D | 70 | | | |
| | 8800 | LEAR | 47 GB | 0535.6 | 0537.0 | 7.2 | 550 | | | |
| | 2695 | MANI | 4 S/F | 0535.8 | 0537.1 | 5.2D | 32 | | | |
| | 2695 | LEAR | 4 S/F | 0536.3 | 0537.3 | 3.5 | 32 | | | |
| | 2800 | OTTA | 1 S | 1210.0 | 1216.5 | 10.0 | 4.4 | 2.1 | | |
| | 8800 | SGMR | 4 S/F | 1249.1 | 1254.3 | 12.7D | 37 | | | |
| | 8800 | ATHN | 4 S/F | 1249.6 | 1254.6 | 16.0 | 35 | | | |
| | 2800 | OTTA | 23 GRF | 1250.0 | | 200.0 | 7.0 | | | |
| | 2695 | SGMR | 4 S/F | 1250.1 | 1253.8 | 12.7D | 08 | | | |
| | 2800 | OTTA | 1 S | 1252.5 | 1255 | 9.0 | 8.6 | 5.7 | | |
| | 2695 | ATHN | 4 S/F | 1253.1 | 1254.6 | 11.7D | 11 | | | |
| | 2800 | OTTA | 1 S | 1353.0 | 1354.5 | 3.0 | 2.2 | 1.0 | | |
| | 8800 | PALE | 8 S | 2149.6 | 2149.8 | 1.2 | 27 | | | |
| | 2800 | OTTA | 3 S | 2156.0 | 2201 | 9.0 | 10.8 | 2.8 | | |
| | 8800 | PALE | 8 S | 2315.0 | 2315.3 | .6 | 35 | | | |
| 17 | 8800 | LEAR | 4 S/F | 0257.1 | 0258.1 | 4.7 | 16 | | | |
| | 8800 | LEAR | 8 S | 0320.5 | 0320.6 | 1.1 | 21 | | | |
| | 8800 | LEAR | 8 S | 0420.6 | 0420.8 | .2 | 15 | | | |
| | 2800 | OTTA | 20 GRF | 1900.0 | 2003 | 120.0 | 3.6 | 1.8 | | |
| 18 | 2695 | PENT | 1 S | 0036.0 | 0036.5 | 1.0 | 5.4 | 1.8 | | |
| | 8800 | LEAR | 8 S | 0036.3 | 0036.5 | .5 | 16 | | | |
| | 2695 | LEAR | 8 S | 0036.3 | 0036.6 | .5 | 06 | | | |
| | 8800 | LEAR | 8 S | 0515.6 | 0516.3 | 1.4 | 08 | | | |

# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS
MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME | TIME OF MAXIMUM | DURATION | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ | | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UT | UT | MINUTES | PEAK | MEAN | | |
| 18 | 2695 | LEAR | 8 S | 0515.8 | 0516.3 | 1.2 | 13 | | | |
| | 3200 | BERN | 3 S | 0948.0 | 0948.8 | 20.0 | .0 | | | ONLY PAPER REC |
| | 8400 | BERN | 3 S | 0948.3 | 0948.6 | 15.0 | 265.0 | | | |
| | 2695 | ATHN | 8 S | 0948.8 | 0000.0U | D | 00.U | | | |
| | 2695 | LEAR | 8 S | 0948.8 | 0949.1 | 1.3 | 53 | | | |
| | 8800 | ATHN | 4 S/F | 0948.8 | 0949.6 | 14.3 | 260 | | | |
| | 8800 | LEAR | 8 S | 0948.8 | 0949.3 | 1.7 | 230 | | | |
| | 8800 | ATHN | 4 S/F | 1515.6 | 1516.1 | 6.4 | 08 | | | |
| | 2800 | OTTA | 21 GRF | 1825.0 | 2125 | 300.0 | 7.0 | 3.5 | | |
| | 2800 | OTTA | 46F C | 1859.0 | 1900.5 | 7.0 | 35.0 | 10.2 | | |
| | 8800 | PALE | 4 S/F | 1859.1 | 1900.3 | 3.5 | 100 | | | |
| | 2695 | PALE | 8 S | 1859.8 | 1900.3 | 1.0 | 38 | | | |
| | 2800 | OTTA | 22 GRF | 2028.0 | 2033.5 | 17.0 | 4.2 | 2.1 | | |
| 19 | 2695 | PENT | 1 S | 0112.0 | 0112.3 | 1.5 | 5.4 | 2.5 | | |
| | 2800 | OTTA | 1 S | 1239.0 | 1239.5 | 1.5 | 2.0 | 1.0 | | |
| | 3200 | BERN | 1 S | 1330.6 | 1331.2 | 9.0 | .0 | | | ONLY PAPER REC |
| | 2800 | OTTA | 1 S | 1331.0 | 1331.3 | 2.0 | 4.0 | 1.4 | | |
| | 2800 | OTTA | 1 S | 1624.7 | 1625 | 1.0 | 2.0 | 1.0 | | |
| | 2800 | OTTA | 21 GRF | 1850.0 | 1905 | 70.0 | 2.8 | 1.4 | | |
| | 2800 | OTTA | 1 S | 1852.0 | 1854 | 3.0 | 2.0 | 1.0 | | |
| | 2800 | OTTA | 24O R | 2005.0 | 2050 | 45.0 | 7.0 | 3.0 | | |
| | 2695 | PENT | 4 S/F | 2311.3 | 2312 | 5.0 | 11.0 | 3.8 | | |
| 20 | 3200 | BERN | 46 C | 0905.3 | 0910.0 | 8.0 | 11.0 | | | |
| | 8400 | BERN | 46 C | 0905.3 | 0907.8 | 8.0 | 21.0 | | | |
| | 8400 | BERN | 4 S/F | 1010.1 | 1111.0 | 2.0 | 17.0 | | | |
| | 3200 | BERN | 4 S/F | 1010.3 | 1110.8 | 2.0 | 11.0 | | | |
| | 2800 | OTTA | 1 S | 1323.0 | 1326 | 10.0 | 2.8 | 1.4 | | |
| | 8400 | BERN | 21 GRF | 1441.3 | 1445.3 | 26.0 | 13.0 | | | |
| | 3200 | BERN | 21 GRF | 1441.8 | 1445.1 | 30.0 | 23.0 | | | |
| | 2695 | SGMR | 4 S/F | 1443.6 | 1445.8 | 5.2D | 31 | | | |
| | 2800 | OTTA | 4 S/F | 1443.7 | 1445.3 | 7.3 | 28.0 | 9.3 | | |
| | 2800 | OTTA | 29 PBI | 1451.0 | 1451 | 20.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 20 GRF | 1600.0 | 1635 | 50.0 | 2.4 | 1.2 | | |
| | 2800 | OTTA | 27AFRF | 1730.0 | | 130.0 | 4.0 | 3.1 | | |
| | 2800 | OTTA | 24 R | 1730.0 | 1750 | 20.0 | 4.0 | 2.0 | | |
| | 2800 | OTTA | 1 S | 1732.0 | 1734 | 5.0 | 3.2 | 1.5 | | |
| | 2800 | OTTA | 24P R | 1750.0 | | 80.0 | 4.0 | | | |
| | 2800 | OTTA | 26 FAL | 1910.0 | 1940 | 30.0 | -4.0 | -1.4 | | |
| | 2800 | OTTA | 46F C | 1955.6 | 1956.7 | 8.0 | 12.4 | 4.2 | | |
| | 2800 | OTTA | 20 GRF | 2055.0 | 2115 | 55.0 | 2.4 | 1.2 | | |
| 21 | 2695 | PENT | 8 S | 0029.5 | 0029.9 | .5 | 9.4 | | | |
| | 8800 | LEAR | 8 S | 0309.[illegible] | 0309.8 | 1.0 | 11 | | | |
| | 2695 | LEAR | 8 S | 0309.8 | 0309.8 | .0 | 08 | | | |
| | 2695 | LEAR | 8 S | 0344.0 | 0344.3 | 1.1 | 50 | | | |
| | 8800 | LEAR | 4 S/F | 0344.0 | 0344.0 | 198.3 | 11 | | | |
| | 8800 | SGMR | 4 S/F | 1219.1 | 1222.6 | 5.7D | 28 | | | |
| | 2695 | SGMR | 4 S/F | 1221.8 | 1222.6 | 2.3D | 31 | | | |
| | 2800 | OTTA | 21 GRF | 1245.0 | 1250 | 30.0 | 3.6 | 2.2 | | |
| | 3200 | BERN | 46 C | 1245.0 | 1300.4 | 75.0 | 62.0 | | | |
| | 8400 | BERN | 46 C | 1255.3 | 1300.4 | 65.0 | 394.0 | | | |
| | 8800 | ATHN | 4 S/F | 1258.6 | 1300.6 | 13.2 | 440 | | | |
| | 2695 | SGMR | 4 S/F | 1259.1 | 1300.3 | 6.4D | 39 | | | |
| | 2695 | ATHN | 4 S/F | 1259.1 | 1300.6 | 6.5D | 49 | | | |
| | 8800 | SGMR | 4 S/F | 1259.1 | 1300.3 | 4.0D | 330 | | | |
| | 2800 | OTTA | 4 S/F | 1259.2 | 1300.6 | 5.0 | 47.0 | 11.0 | | |
| | 2695 | ATHN | 4 S/F | 1332.8 | 1334.1 | 2.5D | 17 | | | |
| | 2800 | OTTA | 4 S/F | 1333.0 | 1334 | 2.0 | 13.4 | 4.4 | | |
| | 2695 | SGMR | 8 S | 1333.1 | 1334.1 | 1.9D | 11 | | | |
| | 8800 | ATHN | 8 S | 1333.3 | 1334.3 | 1.8 | 25 | | | |
| | 8800 | SGMR | 4 S/F | 1333.6 | 1334.1 | 5.4D | 22 | | | |
| | 2800 | OTTA | | 1355.0 | | 45.0 | 4.4 | | | |
| | 2800 | OTTA | 21 GRF | 1445.0 | 1507 | 40.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 8 S | 1504.9 | 1505 | .3 | 2.8 | | | |
| | 2800 | OTTA | 21 GRF | 1540.0 | 1610 | 70.0 | 2.8 | 1.4 | | |
| | 2695 | ATHN | 4 S/F | 1610.1 | 1613.1 | 6.0D | 310 | | | |
| | 3200 | BERN | 46 C | 1611.5 | 1613.1 | 10.0 | 278.0 | | | |
| | 8800 | SGMR | 4 S/F | 1611.5 | 1613.1 | 6.6D | 360 | | | |
| | 8800 | ATHN | 4 S/F | 1611.6 | 1613.3 | 3.7 | 260 | | | |
| | 8400 | BERN | 46 C | 1611.6 | 1613.1 | 6.0 | 378.0 | | | |
| | 2695 | SGMR | 4 S/F | 1611.8 | 1613.1 | 9.7D | 210 | | | |
| | 2800 | OTTA | 4 S/F | 1612.0 | 1613.5 | 8.0 | 156.0 | 28.4 | | |
| | 2800 | OTTA | 24OAR | 1707.0 | 1720 | 13.0 | 5.8 | 2.8 | | |
| | 2800 | OTTA | 1 S | 1711.6 | 1713 | 2.5 | 3.6 | | | |
| | 2800 | OTTA | 21 GRF | 1730.0 | 1756 | 135.0 | 12.6 | 5.6 | | |
| | 2800 | OTTA | 1 S | 1925.0 | 1925.4 | 1.0 | 4.0 | 1.0 | | |
| | 2800 | OTTA | 8 S | 2014.3 | 2014.9 | .7 | 3.8 | | | |
| | 2800 | OTTA | 20 GRF | 2129.0 | 2131 | 11.0 | 4.0 | 2.0 | | |
| | 2800 | OTTA | 2 S/F | 2141.3 | 2142 | 4.0 | 5.6 | 2.8 | | |
| | 2695 | PENT | 20 GRF | 2310.0 | 2350 | 60.0 | 2.4 | 1.2 | | |
| 22 | 3200 | BERN | 3 S | 1151.7 | 1152.5 | 2.0 | .0 | | | ONLY PAPER REC |
| | 3200 | BERN | 45 C | 1222.2 | 1222.7 | 2.0 | 37.0 | | | |

# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS
MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME UT | TIME OF MAXIMUM UT | DURATION MINUTES | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ PEAK | FLUX DENSITY MEAN | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 22 | 2800 | OTTA | 45 C | 1222.3 | 1223 | 1.5 | 26.8 | 13.4 | | |
| | 8400 | BERN | 45 C | 1222.5 | 1222.7 | 1.5 | 33.0 | | | |
| | 2800 | OTTA | 21 GRF | 1420.0 | | 35.0D | 5.0 | | | |
| | 3200 | BERN | 4 S/F | 1429.3 | 1431.1 | 24.0 | 63.0 | | | |
| | 8400 | BERN | 4 S/F | 1430.1 | 1431.4 | 20.0 | 73.0 | | | |
| | 2800 | OTTA | 4 S/F | 1430.2 | 1431.2 | 3.0 | 46.6 | 11.7 | | |
| | 2800 | OTTA | 2 S/F | 1508.0 | 1510.5 | 3.0 | 3.6 | 1.6 | | |
| | 2800 | OTTA | 21 GRF | 1540.0 | 1710 | 185.0 | 13.6 | 6.8 | | |
| | 2800 | OTTA | 8 S | 1642.2 | 1642.5 | .8 | 2.2 | 1.4 | | |
| | 2800 | OTTA | 21 GRF | 1729.0 | 1735 | 20.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 1 S | 1730.0 | 1730.9 | 1.8 | 4.6 | 2.0 | | |
| | 2800 | OTTA | 1 S | 1810.2 | 1810.8 | 1.0 | 2.2 | 1.1 | | |
| | 2800 | OTTA | 21 GRF | 1824.0 | 1827 | 11.0 | 3.2 | 1.6 | | |
| | 2800 | OTTA | 1 S | 1826.0 | 1826.5 | 1.0 | 6.4 | 2.2 | | |
| | 2800 | OTTA | 8 S | 1828.0 | 1828.5 | .8 | 1.8 | .9 | | |
| | 2800 | OTTA | 21 GRF | 1846.0 | 1852 | 25.0 | 2.2 | | | |
| | 2800 | OTTA | 1 S | 1847.0 | 1848 | 2.0 | 1.8 | 1.3 | | |
| | 2800 | OTTA | 1 S | 1902.2 | 1902.5 | 3.0 | 2.6 | 1.8 | | |
| | 2800 | OTTA | 8 S | 1931.6 | 1931.7 | .5 | 2.2 | 1.1 | | |
| | 2800 | OTTA | 1 S | 1944.0 | 1944.3 | 1.0 | 3.2 | 2.2 | | |
| | 2800 | OTTA | 4 S/F | 1948.5 | 1952 | 8.0 | 19.6 | 4.6 | | |
| | 2800 | OTTA | 8 S | 1959.0 | 1959.5 | .5 | 7.2 | | | |
| | 2800 | OTTA | 2 S/F | 2044.5 | 2045.8 | 3.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 3 S | 2144.0 | 2144.5 | 3.5 | 75.0 | 18.8 | | |
| | 2800 | OTTA | 45 C | 2200.5 | 2200.9 | 4.0 | 46.6 | 10.8 | | |
| | 2800 | OTTA | 22 GRF | 2217.0 | 2220 | 13.0 | 6.4 | 3.2 | | |
| | 8800 | PALE | 4 S/F | 2217.1 | 2220.0 | 3.4 | 20 | | | |
| | 8800 | LEAR | 4 S/F | 2306.1 | 2306.6 | 2.5 | 170 | | | |
| | 8800 | MANI | 4 S/F | 2306.3 | 2307.0 | 3.3 | 220 | | | |
| | 8800 | PALE | 8 S | 2306.3 | 2306.6 | .5 | 130 | | | |
| | 2695 | MANI | 4 S/F | 2306.5 | 2377.1 | 2.6D | 23 | | | |
| | 2695 | LEAR | 8 S | 2306.5 | 2306.6 | .3 | 17 | | | |
| | 8800 | LEAR | 8 S | 2341.3 | 2341.8 | 1.5 | 20 | | | |
| | 2695 | LEAR | 8 S | 2341.5 | 2342.1 | .6 | 13 | | | |
| | 8800 | PALE | 4 S/F | 2352.5 | 2353.5 | 1193.5 | 370 | | | |
| | 8800 | LEAR | 47 GB | 2352.5 | 2353.5 | 1431.4 | 440 | | | |
| | 2695 | LEAR | 4 S/F | 2353.0 | 2354.6 | 2.3 | 250 | | | |
| | 2695 | PALE | 8 S | 2353.1 | 2354.6 | 2.0 | 230 | | | |
| 23 | 2695 | LEAR | 8 S | 0310.8 | 0312.0 | 1.5 | 10 | | | |
| | 8800 | PALE | 4 S/F | 0311.3 | 0311.6 | 15.5D | 17 | | | |
| | 8800 | LEAR | 8 S | 0311.5 | 0311.8 | .6 | 15 | | | |
| | 8800 | ATHN | 47 GB | 0645.5 | 0656.5 | | 520 | | | |
| | 2695 | ATHN | 8 S | 0645.6 | 0656.5U | D | 270 | | | |
| | 8800 | LEAR | 47 GB | 0653.0 | 0656.5 | 24.6 | 520 | | | |
| | 2695 | LEAR | 4 S/F | 0653.1 | 0656.6 | 15.7 | 200 | | | |
| | 8400 | BERN | 4 S/F | 0655.0 | 0656.5 | 65.0 | 463.0 | | | |
| | 3200 | BERN | 4 S/F | 0655.3 | 0656.5 | 65.0 | 288.0 | | | |
| | 8800 | LEAR | 8 S | 0731.5 | 0733.0 | 1.6 | 13 | | | |
| | 2695 | LEAR | 8 S | 0732.1 | 0732.8 | 1.2 | 38 | | | |
| | 3200 | BERN | 45 C | 1003.5 | 1018.3 | 40.0 | 57.0 | | | |
| | 8400 | BERN | 45 C | 1003.5 | 1022.1 | 40.0 | 100.0 | | | |
| | 2695 | ATHN | 4 S/F | 1015.3 | 1018.1 | 18.0D | 139 | | | |
| | 8800 | ATHN | 47 GB | 1016.5 | 1018.0 | 12.1 | 110 | | | |
| | 3200 | BERN | 3 S | 1101.0 | 1109.3 | 16.0 | 90.0 | | | |
| | 8400 | BERN | 3 S | 1101.1 | 1101.6 | 13.0 | 45.0 | | | |
| | 8800 | ATHN | 8 S | 1102.0 | 1102.3 | .8 | 35 | | | |
| | 2695 | ATHN | 4 S/F | 1102.1 | 1102.3 | 2.7D | 66 | | | |
| | 8800 | ATHN | 4 S/F | 1109.0 | 1110.3 | 2.6 | 50 | | | |
| | 2695 | ATHN | 4 S/F | 1109.5 | 1110.1 | 3.5D | 75 | | | |
| | 2695 | ATHN | 4 S/F | 1121.8 | 1124.6 | 9.5D | 45 | | | |
| | 8400 | BERN | 3 S | 1122.1 | 1123.0 | 24.0 | 63.0 | | | |
| | 2695 | SGMR | 4 S/F | 1122.1 | 1123.0 | 4.0 | 21 | | | |
| | 3200 | BERN | 3 S | 1122.1 | 1123.0 | 30.0 | 33.0 | | | |
| | 8800 | SGMR | 4 S/F | 1122.3 | 1123.1 | 5.3D | 21 | | | |
| | 8800 | ATHN | 4 S/F | 1122.8 | 1123.6 | 9.0 | 65 | | | |
| | 2800 | OTTA | 21 GRF | 1156.0 | 1159 | 21.0 | 5.4 | 2.7 | | |
| | 8800 | ATHN | 4 S/F | 1201.8 | 1203.3 | 5.5 | 390 | | | |
| | 2695 | ATHN | 4 S/F | 1202.0 | 1204.3 | 5.3D | 64 | | | |
| | 2695 | ATHN | 4 S/F | 1202.0 | 1204.3 | 5.3D | 64 | | | |
| | 2800 | OTTA | 4 S/F | 1202.0 | 1202.5 | 4.0 | 42.0 | 7.8 | | |
| | 8400 | BERN | 4 S/F | 1202.4 | 1204.3 | 10.0 | 395.0 | | | |
| | 3200 | BERN | 4 S/F | 1202.7 | 1204.3 | 10.0 | 55.0 | | | |
| | 8800 | SGMR | 4 S/F | 1202.8 | 1204.1 | 10.2D | 360 | | | |
| | 2695 | SGMR | 4 S/F | 1203.1 | 1204.3 | 8.9D | 38 | | | |
| | 2800 | OTTA | 8 S | 1207.0 | 1207 | .2 | 10.4 | | | |
| | 2695 | ATHN | 4 S/F | 1208.8 | 1209.8 | 3.2D | 60 | | | |
| | 2800 | OTTA | 4 S/F | 1209.0 | 1209.7 | 2.5 | 39.0 | 9.8 | | |
| | 8800 | ATHN | 4 S/F | 1209.1 | 1209.5 | 3.7 | 119 | | | |
| | 2800 | OTTA | 21 GRF | 1220.0 | 1610 | 450.0 | 14.4 | | | |
| | 2800 | OTTA | 1 S | 1242.0 | 1243 | 2.5 | 2.8 | 1.3 | | |
| | 2800 | OTTA | 8 S | 1254.0 | 1254.1 | .5 | 9.0 | 4.5 | | |
| | 2800 | OTTA | 1 S | 1557.0 | 1558 | 3.0 | 2.2 | 1.1 | | |
| | 8800 | SGMR | 47 GB | 1736.0 | 1736.3 | 4.1D | 59 | | | |
| | 2800 | OTTA | 2 S/F | 1736.0 | 1738.5 | 8.0 | 9.4 | 3.2 | | |

# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS

MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME UT | TIME OF MAXIMUM UT | DURATION MINUTES | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ PEAK | FLUX DENSITY MEAN | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 2695 | SGMR | 4 S/F | 1736.1 | 1737.1 | 3.9D | 06 | | | |
| | 2800 | OTTA | 20 GRF | 1927.0 | 1930 | 20.0 | 6.4 | 2.6 | | |
| | 2800 | OTTA | 21 GRF | 2055.0 | 2155 | 100.0 | 3.0 | 1.6 | | |
| | 2800 | OTTA | 1 S | 2114.0 | 2116 | 5.0 | 1.2 | .6 | | |
| | 8800 | PALE | 4 S/F | 2115.1 | 2115.8 | 2.2 | 35 | | | |
| 24 | 8800 | LEAR | 4 S/F | 0155.1 | 0156.8 | 7.0 | 36 | | | |
| | 8800 | LEAR | 8 S | 0618.6 | 0619.1 | .9 | 24 | | | |
| | 8800 | ATHN | 4 S/F | 0618.6 | 0624.1 | 9.9 | 26 | | | |
| | 8400 | BERN | 1 S | 0621.5 | 0625.1 | 10.0 | 29.0 | | | ONLY PAPER REC |
| | 2695 | ATHN | 8 S | 0623.6 | 0624.5 | 1.9D | 37 | | | |
| | 3200 | BERN | 8 S | 0624.5 | 0625.1 | 2.0 | .0 | | | ONLY PAPER REC |
| | 8800 | LEAR | 47 GB | 0624.6 | 0625.1 | 2.0 | 36 | | | |
| | 2695 | LEAR | 8 S | 0625.0 | 0625.1 | .5 | 31 | | | |
| | 3200 | BERN | 3 S | 0717.3 | 0717.8 | 2.0 | 8.0 | | | |
| | 8800 | ATHN | 4 S/F | 0717.3 | 0719.6 | 3.0 | 74 | | | |
| | 8400 | BERN | 3 S | 0717.3 | 0719.8 | 5.0 | 94.0 | | | |
| | 2695 | LEAR | 8 S | 0717.6 | 0717.8 | .5 | 17 | | | |
| | 8800 | LEAR | 4 S/F | 0717.6 | 0719.8 | 2.5 | 110 | | | |
| | 2800 | OTTA | 8 S | 1238.8 | 1238.9 | .5 | 3.2 | 1.6 | | |
| | 2800 | OTTA | 240 R | 1245.0 | 1300 | 15.0 | 4.2 | 2.1 | | |
| | 2800 | OTTA | 20 GRF | 1420.0 | 1430 | 40.0D | 3.6 | | | |
| | 2800 | OTTA | 23 GRF | 1725.0 | 1743 | 155.0 | 5.0 | | | |
| | 2800 | OTTA | 45 C | 1728.3 | 1733.3 | 9.0 | 29.4 | 9.4 | | |
| | 2695 | SGMR | 4 S/F | 1728.6 | 1733.1 | 6.7D | 27 | | | |
| | 8800 | SGMR | 4 S/F | 1732.1 | 1733.3 | 3.2 | 27 | | | |
| | 2695 | PALE | 8 S | 1733.0 | 1733.3 | 1.1 | 35 | | | |
| | 8800 | PALE | 8 S | 1733.0 | 1733.3 | 1.1 | 48 | | | |
| | 2695 | PENT | 20 GRF | 2220.0 | 2222 | 19.0 | 2.8 | 1.4 | | |
| | 2695 | PENT | 20 GRF | 2240.0 | 2255 | 37.0 | 3.6 | 1.8 | | |
| | 2695 | PENT | 1 S | 2340.0 | 2340.5 | 2.0 | 6.8 | 3.0 | | |
| | 2695 | PENT | 1 S | 2342.3 | 2343 | 1.7 | 5.8 | 2.9 | | |
| 25 | 8800 | LEAR | 4 S/F | 0505.8 | 0506.8 | 2.7 | 39 | | | |
| | 2695 | ATHN | 4 S/F | 0558.3 | 0558.6 | 2.8D | 20 | | | |
| | 2695 | LEAR | 8 S | 0558.3 | 0558.8 | 1.0 | 19 | | | |
| | 2695 | LEAR | 8 S | 0607.6 | 0609.3 | .2 | 15 | | | |
| | 8800 | LEAR | 8 S | 0608.5 | 0609.3 | .1 | 16 | | | |
| | 8800 | ATHN | 4 S/F | 0610.6 | 0614.6 | 9.4 | 24 | | | |
| | 8400 | BERN | 46 C | 0611.5 | 0614.7 | 5.0 | 26.0 | | | ONLY PAPER REC |
| | 3200 | BERN | 45 C | 0611.5 | 0614.7 | 5.0 | .0 | | | ONLY PAPER REC |
| | 2695 | ATHN | 4 S/F | 0612.3 | 0614.8 | 4.3D | 18 | | | |
| | 8800 | LEAR | 8 S | 0624.8 | 0625.0 | 1.0 | 26 | | | |
| | 3200 | BERN | 1 S | 0655.8 | 0656.3 | 3.0 | .0 | | | ONLY PAPER REC |
| | 8800 | LEAR | 8 S | 0847.8 | 0847.8 | .3 | 51 | | | |
| | 2695 | LEAR | 8 S | 0847.8 | 0847.8 | .3 | 32 | | | |
| | 8400 | BERN | 1 S | 1012.7 | 1013.3 | 3.0 | 26.0 | | | ONLY PAPER REC |
| | 2800 | OTTA | 1 S | 1328.0 | 1328.8 | 4.0 | 2.6 | 1.3 | | |
| | 2800 | OTTA | 1 S | 1458.0 | 1459.2 | 2.0 | 7.8 | 1.9 | | |
| | 2800 | OTTA | 240AR | 1837.0 | 1907 | 30.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 1 S | 1839.0 | 1840.2 | 10.0 | 4.4 | 2.0 | | |
| | 2800 | OTTA | 24 R | 1920.0 | 1930 | 10.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 27A RF | 1920.0 | | 230.0 | 3.6 | 3.3 | | |
| | 2800 | OTTA | 1 S | 1921.0 | 1921.5 | 2.0 | 7.0 | 2.4 | | |
| | 2800 | OTTA | 24P R | 1930.0 | | 200.0 | 3.6 | | | |
| | 2800 | OTTA | 45 C | 2038.0 | 2040.5 | 16.0 | 264.0 | 97.0 | | |
| | 2800 | OTTA | 29 PBI | 2054.0 | 2054 | 50.0 | 7.0 | 2.0 | | |
| | 2695 | PENT | 26 FAL | 2250.0 | 2310 | 20.0 | -3.6 | -1.8 | | |
| 26 | 8400 | BERN | 41 F | 0441.5 | 1445.0 | 24.0 | 45.0 | | | |
| | 8800 | ATHN | 8 S | 0630.5 | 0631.0 | .8 | 45 | | | |
| | 8400 | BERN | 46 C | 1121.0 | 1123.3 | 6.0 | 26.0 | | | |
| | 3200 | BERN | 46 C | 1121.2 | 1123.3 | 7.0 | 13.0 | | | |
| | 8800 | ATHN | 4 S/F | 1121.6 | 1123.3 | 7.4 | 23 | | | |
| | 2695 | ATHN | 4 S/F | 1121.6 | 1123.3 | 9.4D | 10 | | | |
| | 2800 | OTTA | 21 GRF | 1225.0 | 1310 | 65.0 | 2.8 | 1.6 | | |
| | 2800 | OTTA | 1 S | 1246.0 | 1247 | 2.0 | 2.8 | 1.2 | | |
| | 2800 | OTTA | 40 F | 1426.0 | 1428.1 | 3.0 | 22.0 | | | |
| | 3200 | BERN | 4 S/F | 1441.0 | 1445.0 | 22.0 | 18.0 | | | |
| | 2800 | OTTA | 21 GRF | 1442.0 | 1447 | 18.0 | 5.4 | 2.7 | | |
| | 2695 | SGMR | 4 S/F | 1442.6 | 1445.0 | 3.9D | 19 | | | |
| | 2695 | ATHN | 4 S/F | 1443.0 | 1445.0 | 4.0D | 26 | | | |
| | 2800 | OTTA | 3 S | 1444.0 | 1445.2 | 3.0 | 11.6 | 4.0 | | |
| | 8800 | SGMR | 8 S | 1444.6 | 1445.3 | 2.0D | 35 | | | |
| | 8800 | ATHN | 4 S/F | 1444.6 | 1445.0 | 2.5 | 27 | | | |
| | 2800 | OTTA | 40 F | 1449.0 | 1449.3 | 6.0 | 3.6 | | | |
| | 2800 | OTTA | 23 GRF | 1530.0 | 1840 | 410.0 | 8.2 | 4.1 | | |
| | 2800 | OTTA | 1 S | 1532.5 | 1533 | 1.0 | 3.6 | 1.5 | | |
| | 2800 | OTTA | 1 S | 1539.8 | 1540.2 | 1.0 | 2.0 | 1.0 | | |
| | 2800 | OTTA | 22 GRF | 1811.0 | 1813.8 | 20.0 | 8.4 | 2.8 | | |
| | 2695 | SGMR | 4 S/F | 1936.8 | 1938.8 | 5.5D | 240 | | | |
| | 8800 | SGMR | 4 S/F | 1937.5 | 1941.5 | 9.0D | 37 | | | |
| | 2800 | OTTA | 4 S/F | 1937.8 | 1939 | 5.0 | 200.0 | 20.0 | | |
| | 2695 | PALE | 4 S/F | 1938.1 | 1939.0 | 2.7 | 310 | | | |
| | 8800 | PALE | 4 S/F | 1938.3 | 1940.6 | 3.0 | 49 | | | |

# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS

MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME | TIME OF MAXIMUM | DURATION | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ | | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UT | UT | MINUTES | PEAK | MEAN | | |
| 26 | 2800 | OTTA | 1 S | 1947.0 | 1948 | 2.5 | 2.6 | 1.3 | | |
| | 2800 | OTTA | 1 S | 2133.9 | 2134.3 | 4.0 | 3.6 | 1.8 | | |
| | 2695 | PENT | 1 S | 2343.5 | 2344.5 | 2.0 | 3.6 | 1.8 | | |
| 27 | 8800 | LEAR | 4 S/F | 0053.1 | 0054.1 | 2.7 | 18 | | | |
| | 2695 | LEAR | 8 S | 0158.3 | 0158.5 | .8 | 33 | | | |
| | 2695 | PALE | 8 S | 0159.1 | 0159.5 | .9 | 24 | | | |
| | 2695 | PALE | 8 S | 0202.0 | 0202.0 | .1 | 18 | | | |
| | 2695 | LEAR | 8 S | 0246.1 | 0246.6 | .7 | 18 | | | |
| | 2695 | PALE | 8 S | 0246.3 | 0246.6 | .2 | 13 | | | |
| | 2800 | OTTA | 20 GRF | 1625.0 | 1630 | 30.0 | 5.8 | 1.9 | | |
| | 2800 | OTTA | 20 GRF | 1700.0 | 1735 | 100.0 | 2.8 | 1.4 | | |
| | 2800 | OTTA | 24O R | 1955.0 | 2005 | 10.0 | 2.8 | 1.9 | | |
| | 2800 | OTTA | 23 GRF | 2125.0 | 2230 | 155.0 | 10.8 | 5.0 | | |
| | 2800 | OTTA | 1 S | 2200.0 | 2202.5 | 3.0 | 2.6 | 1.3 | | |
| | 2800 | OTTA | 1 S | 2233.0 | 2234 | 2.0 | 2.4 | 1.2 | | |
| 28 | 2695 | PENT | 3 S | 0004.5 | 0005 | 1.5 | 14.4 | 7.2 | | |
| | 2695 | MANI | 4 S/F | 0004.5 | 0005.3 | 2.1D | 15 | | | |
| | 8800 | MANI | 8 S | 0004.6 | 0005.3 | 2.0 | 27 | | | |
| | 2695 | PALE | 8 S | 0004.6 | 0005.0 | 1.0 | 21 | | | |
| | 8800 | PALE | 8 S | 0004.0 | 0005.1 | .0 | 28 | | | |
| | 8800 | MANI | 8 S | 0413.5 | 0414.5 | 2.0 | 250 | | | |
| | 2695 | MANI | 8 S | 0413.5 | 0414.3 | 2.0D | 83 | | | |
| | 3200 | BERN | 46 C | 0533.6 | 0536.1 | 9.0 | 45.0U | | | |
| | 8400 | BERN | 46 C | 0533.7 | 0535.1 | 9.0 | 320.0U | | | |
| | 8800 | LEAR | 4 S/F | 0534.0 | 0535.0 | 3.6D | 300 | | | |
| | 2695 | LEAR | 4 S/F | 0534.1 | 0535.6 | 3.5D | 49 | | | |
| | 2695 | MANI | 47 GB | 0534.3 | 0535.6 | 14.7D | 47 | | | |
| | 8800 | MANI | 47 GB | 0534.5 | 0535.0 | 4.5 | 250 | | | |
| | 2695 | ATHN | 4 S/F | 0534.6 | 0535.0 | 15.7D | 61 | | | |
| | 8800 | ATHN | 4 S/F | 0534.6 | 0535.0 | 9.0 | 260 | | | |
| | 8800 | ATHN | 4 S/F | 1210.0 | 1212.0 | 11.0 | 61 | | | |
| | 8400 | BERN | 46 C | 1210.6 | 1212.0 | 9.0 | 40.0 | | | |
| | 2695 | ATHN | 4 S/F | 1210.0 | 1212.0 | 13.0D | 00 | | | |
| | 8800 | SGMR | 4 S/F | 1211.0 | 1212.1 | 2.1D | 34 | | | |
| | 3200 | BERN | 46 C | 1211.0 | 1212.1 | 4.0 | 5.0 | | | |
| | 2695 | SGMR | 8 S | 1211.1 | 1212.1 | 1.9D | 06 | | | |
| | 2800 | OTTA | 45 C | 1211.1 | 1212.2 | 3.0 | 4.4 | | | |
| | 2695 | SGMR | 8 S | 1211.1 | 1212.1 | 1.9D | 06 | | | |
| | 3200 | BERN | 45 C | 1504.0 | 1513.7 | 15.0 | 26.0 | | | |
| | 2800 | OTTA | 45 C | 1506.0 | 1513.9 | 12.0 | 29.0 | 10.0 | | |
| | 2695 | ATHN | 4 S/F | 1506.6 | 1513.0 | 9.4D | 22 | | | |
| | 2800 | OTTA | 29 PBI | 1518.0 | 1518 | 25.0 | 3.2 | 1.5 | | |
| | 2800 | OTTA | 27A RF | 1600.0 | | 240.0 | 3.6 | 3.0 | | |
| | 2800 | OTTA | 24 R | 1600.0 | 1620 | 20.0 | 3.6 | 1.8 | | |
| | 2800 | OTTA | 24P R | 1620.0 | | 160.0 | 3.6 | | | |
| | 2800 | OTTA | 20 GRF | 1802.0 | 1805 | 13.0 | 2.6 | 1.3 | | |
| | 2800 | OTTA | 26 PAL | 1900.0 | 2000 | 60.0 | -3.6 | -1.0 | | |
| | 2800 | OTTA | 24O R | 2056.0 | 2059 | 3.0 | 2.6 | 1.0 | | |
| | 2695 | PENT | 20 GRF | 2250.0 | 2330 | 80.0 | 2.6 | 1.3 | | |
| 29 | 2695 | LEAR | 8 S | 0258.6 | 0258.6 | .2D | 07 | | | |
| | 8400 | BERN | 20 GRF | 0703.0 | 0715.1 | 30.0 | 15.0U | | | |
| | 3200 | BERN | 20 GRF | 0919.2 | 0927.5 | 19.0 | 7.0 | | | |
| | 3200 | BERN | 3 S | 1050.7 | 1055.0 | 45.0 | 32.0 | | | |
| | 8400 | BERN | 3 S | 1050.0 | 1054.6 | 36.0 | 30.0 | | | |
| | 2695 | ATHN | 4 S/F | 1054.0 | 1055.3 | 5.0D | 32 | | | |
| | 8800 | ATHN | 4 S/F | 1054.0 | 1055.0 | 4.5 | 25 | | | |
| | 2800 | OTTA | 24 R | 1250.0 | 1315 | 25.0 | 3.8 | 1.9 | | |
| | 2800 | OTTA | 27AFRF | 1250.0 | | 440.0 | 3.8 | 3.6 | | |
| | 2800 | OTTA | 24P R | 1315.0 | | 400.0 | 3.8 | | | |
| | 2800 | OTTA | 20 GRF | 1325.0 | 1340 | 65.0 | 4.2 | | | |
| | 2800 | OTTA | 8 S | 1441.7 | 1442 | .6 | 6.4 | | | |
| | 3200 | BERN | 22 GRF | 1603.2 | 1610.0 | 10.0 | 13.0 | | | |
| | 2800 | OTTA | 20 GRF | 1605.0 | 1610 | 20.0 | 10.0 | 2.0 | | |
| | 2800 | OTTA | 20 GRF | 1627.0 | | 60.0 | 2.4 | | | |
| | 2800 | OTTA | 20 GRF | 1750.0 | 1806 | 30.0 | 4.2 | 2.1 | | |
| | 8800 | PALE | 4 S/F | 1823.3 | 1823.8 | 2.2 | 53 | | | |
| | 2800 | OTTA | 1 S | 1949.0 | 1951 | 5.0 | 2.6 | 1.3 | | |
| | 2800 | OTTA | 26 PAL | 1955.0 | 2010 | 15.0 | -3.0 | -1.3 | | |
| | 2695 | PENT | 2 S/F | 2256.5 | 2257 | 1.0 | 5.4 | | | |
| | 8800 | LEAR | 8 S | 2314.0 | 2315.0 | .3 | 61 | | | |
| | 2695 | PENT | 3 S | 2320.0 | 2321.2 | 2.5 | 22.0 | 8.0 | | |
| | 2695 | LEAR | 8 S | 2320.6 | 2321.1 | .7 | 17 | | | |
| 30 | 2695 | PENT | 46F C | 0006.0 | 0023 | 72.0 | 435.0 | 188.0 | | |
| | 2695 | MANI | 47 GB | 0009.0 | 0023.1 | 70.0D | 460 | | | |
| | 2695 | PALE | 47 GB | 0011.0 | 0023.0 | 80.5 | 410 | | | |
| | 8800 | MANI | 47 GB | 0013.0 | 0023.0 | 65.0 | 130 | | | |
| | 8800 | PALE | 47 GB | 0016.6 | 0050.3 | 83.2 | 139 | | | |
| | 2695 | PENT | 29 PBI | 0118.0 | 0118 | 20.0D | 50.0 | | | |
| | 8800 | LEAR | 8 S | 0312.3 | 0313.1 | 1.2 | 23 | | | |
| | 8800 | LEAR | 4 S/F | 0542.1 | 0544.1 | 4.5 | 27 | | | |
| | 2800 | OTTA | 27A RF | 1220.0 | | 355.0 | 4.2 | 4.0 | | |

# SOLAR RADIO EMISSION
## SELECTED FIXED FREQUENCY EVENTS
MARCH 1981

| DAY OF MONTH | FREQUENCY | STATION | TYPE | STARTING TIME UT | TIME OF MAXIMUM UT | DURATION MINUTES | FLUX DENSITY $10^{-22}$ Wm$^{-2}$ Hz$^{-1}$ PEAK | FLUX DENSITY MEAN | INT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 2800 | OTTA | 24 R | 1220.0 | 1230 | 10.0 | 4.2 | | | |
| | 2800 | OTTA | 24P R | 1230.0 | | 330.0 | 4.2 | | | |
| | 2800 | OTTA | 20 GRF | 1430.0 | 1500 | 70.0 | 4.2 | 3.3 | | |
| | 2800 | OTTA | 26 FAL | 1800.0 | 1815 | 15.0 | -4.2 | -2.1 | | |
| | 2800 | OTTA | 20 GRF | 1945.0 | 2030 | 105.0 | 3.8 | 1.9 | | |
| | 2800 | OTTA | 8 S | 2226.0 | 2226.2 | .5 | 7.2 | 3.6 | | |
| | 8800 | PALE | 4 S/F | 2301.1 | 2302.5 | 2.5 | 34 | | | |
| 31 | 8800 | LEAR | 4 S/F | 0442.8 | 0443.3 | 5.3 | 31 | | | |
| | 8800 | LEAR | 4 S/F | 0634.3 | 0640.8 | 7.8 | 21 | | | |
| | 8800 | LEAR | 4 S/F | 0653.0 | 0654.0 | 3.5 | 27 | | | |
| | 2800 | OTTA | 24O R | 1215.0 | 1223 | 8.0 | 3.2 | 1.6 | | |
| | 8800 | ATHN | 8 S | 1301.5 | 1301.8 | .5 | 36 | | | |
| | 2695 | ATHN | 8 S | 1301.6 | 1302.1 | .7D | 04 | | | |
| | 2800 | OTTA | 8 S | 1301.8 | 1302 | .3 | 2.8 | | | |
| | 2800 | OTTA | 22 GRF | 1335.0 | 1420 | 265.0 | 11.6 | 5.8 | | |
| | 2800 | OTTA | 20 GRF | 2020.0 | 2030 | 20.0 | 2.8 | 1.7 | | |
| | 2800 | OTTA | 26A FAL | 2050.0 | 2145 | 55.0 | -7.4 | -4.0 | | |
| | 2800 | OTTA | 1 S | 2135.7 | 2136 | 1.3 | 4.2 | 2.0 | | |
| | 2695 | PENT | 20 GRF | 2150.0 | 2230 | 90.0 | 5.2 | 2.6 | | |

Observatories:

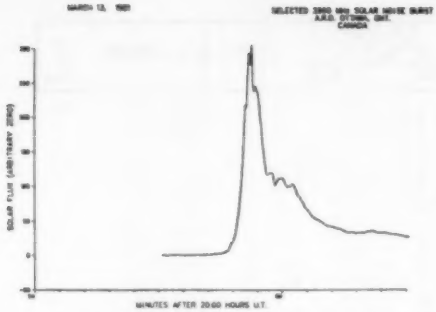
BERN = Berne MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill
LEAR = Learmonth ATHN = Athens PALE = Palehua

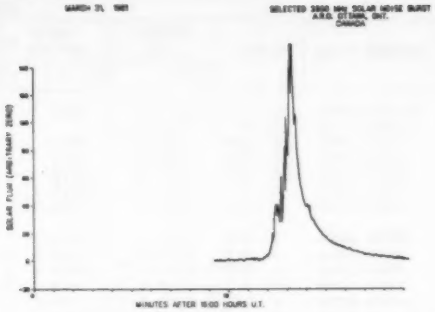
Explanation of Type Code:

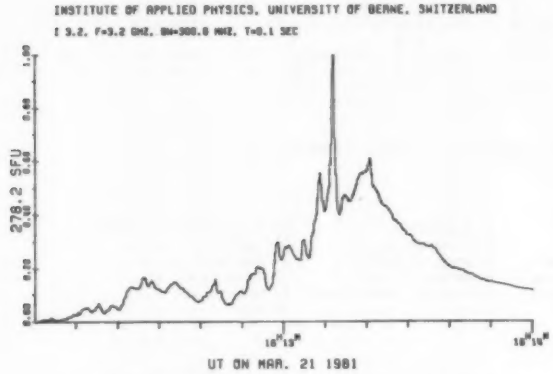
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

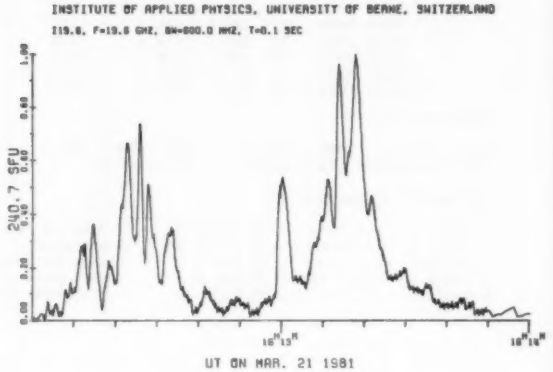
# SELECTED SOLAR NOISE BURSTS

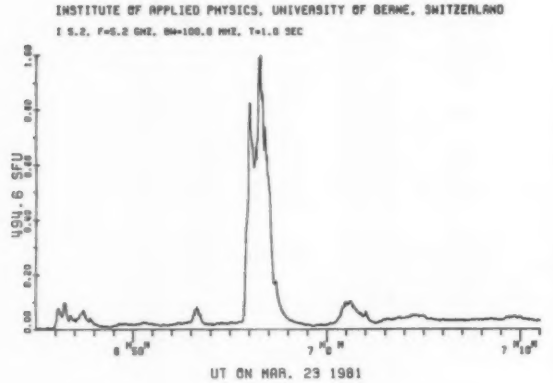
MARCH 13-30, 1981

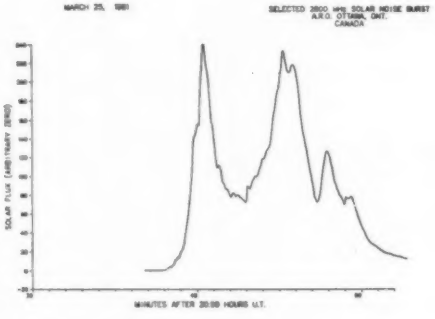


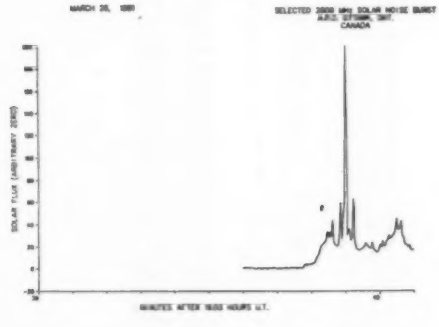



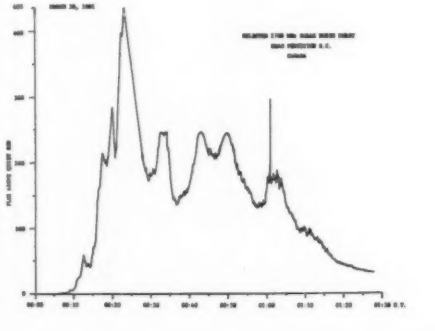


INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND
I 9.2, F=9.2 GHZ, BW=900.0 MHZ, T=0.1 SEC
278.2 SFU
18H13M
18H14M
UT ON MAR. 21 1981


INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND
I19.6, F=19.6 GHZ, BW=800.0 MHZ, T=0.1 SEC
240.7 SFU
18H13M
18H14M
UT ON MAR. 21 1981



# BOULDER GEOMAGNETIC SUBSTORM LOG

## MARCH 1981

| DATE | ONSET TIME | DIR | COMMENTS |
|---|---|---|---|
| 03/01 | 0738 | SSC | Field active through 1900 UT. |
| | 0825 | West | |
| | 1130 | | Localized SS Talkeetna To Arctic Village. |
| | 1325 | | Localized SS Talkeetna To Arctic Village. |
| 03/02 | 0655 | | Positive impulse H-component all mid/low latitude stations. |
| | 0710 | | |
| | 0950 | ≈ center | Moderate SS. |
| | 1220 | West | |
| 03/03 | | | Intermittently unsettled after 0900 UT. |
| 03/04 | | | Field unsettled through 1200 UT. |
| | 0820 | West | Several injections with recovery near 1130 UT. |
| 03/05 | 0536 | SSC | Magstorm conditions through 2200 UT. |
| 03/06 | | | Field slightly unsettled. |
| 03/07 | 0152 | | Weak positive impulse H-component all mid/low latitude stations. |
| | 1010 | West | Several injections with recovery near 1330 UT. |
| | 1450 | | Several injections with recovery near 2000 UT. |
| | 1845 | | Localized SS Norman Wells to Arctic Village to Sachs Harbour. |
| 03/08 | 0845 | West | |
| | 1225 | West | |
| 03/09 | | | Field slightly unsettled 1000-1500 UT, quiet balance of day. |
| 03/10 | 1000 | West | Slow onset, several injections with recovery near 1300 UT. |
| 03/11 | 0605 | | Slow onset, weak SS. |
| | 1035 | West | SS response most noticeable from College to Arctic Village. |
| 03/12 | 0905 | West | Several minor injections with recovery near 1100 UT. |
| | 1425 | | Weak SS. |
| | 1824 | | Weak positive impulse H-component all mid/low latitude stations. |
| 03/13 | | | Field unsettled after 0800 UT. |
| | 1300 | | Numerous minor injections with recovery near 1900 UT. |
| | 2130 | East | Slow onset SS. Boulder in partial ring current sector. |
| 03/14 | 0400 | | All low/mid latitude stations H-component initially went negative then sharply positive. Minor magstorm conditions through 1630 UT. |
| 03/15 | | | Field intermittently unsettled. |
| | 0420 | East | Moderate SS at Boulder. |
| | 1225 | West | |
| | 1645 | West | |
| 03/16 | | | Field intermittently unsettled. |
| | 0535 | East | Weak SS. |
| | 0650 | | Weak SS. |
| 03/17 | | | Field intermittently unsettled. |
| | 0845 | West | Weak SS. |
| | 1210 | | Localized SS vicinity College. |
| | 1315 | | Slow onset SS, several minor injections with recovery near 1600 UT. |
| 03/18 | | | Field active 0600-2000 UT. |
| | 0325 | East | Weak SS. |
| | 0610 | | Weak SS. |
| | 0710 | West | Moderate SS. |
| | 1040 | West | |
| | 1125 | West | |
| | 1745 | | Slow expansion northwards through Alaska. |
| 03/19 | 1510 | | Slow onset, numerous minor injections with recovery near 2000 UT. |
| 03/20 | 0845 | West | Weak SS. |
| | 1245 | West | |
| 03/21 | | | Field slightly unsettled. |
| 03/22 | | | Quiet Day. |
| 03/23 | | | No network data 0130-0945 UT. |
| | 1120 | | Weak SS vicinity College. |
| 03/24 | | | Field slightly unsettled. |
| | 1950 | | Slow rise positive impulse H-component all mid/low latitude stations. |
| 03/25 | 0530 | East | |
| | 1250 | West | Initial onset at College. Strong SS, several injections with recovery near 1603 UT. Field moderately unsettled balance of the day. |
| | 1745 | | Positive impulse H-component all mid/low latitude stations. |
| 03/26 | | | Field unsettled all day. |
| | 1155 | | Initial onset, numerous injections with recovery near 1730 UT. |
| | 1320 | | Strong injection into existing SS activity. |
| 03/27 | 0700 | ≈ center | |
| | 1415 | | |
| 03/28 | | | Field intermittently unsettled. |
| | 0930 | West | Weak SS. |
| | 1315 | West | Slow onset with recovery near 1700 UT. |
| 03/29 | | | Field intermittently unsettled. |
| | 0555 | East | Weak SS. |
| | 0740 | East | |
| | 1030 | West | Moderate SS. |
| 03/30 | 1220 | | Weak onset, several injections with recovery near 1500 UT. |
| | 1630 | | Initiation at Arctic Village with slow expansion northward. Polar Cap stations remained active balance of the day. |
| 03/31 | | | Field unsettled all day. |
| | 0930 | West | |
| | 1505 | | Weak SS. |
| | 1810 | | Slow expansion northward from Fort Yukon. |

# INFERRED IP MAGNETIC FIELD

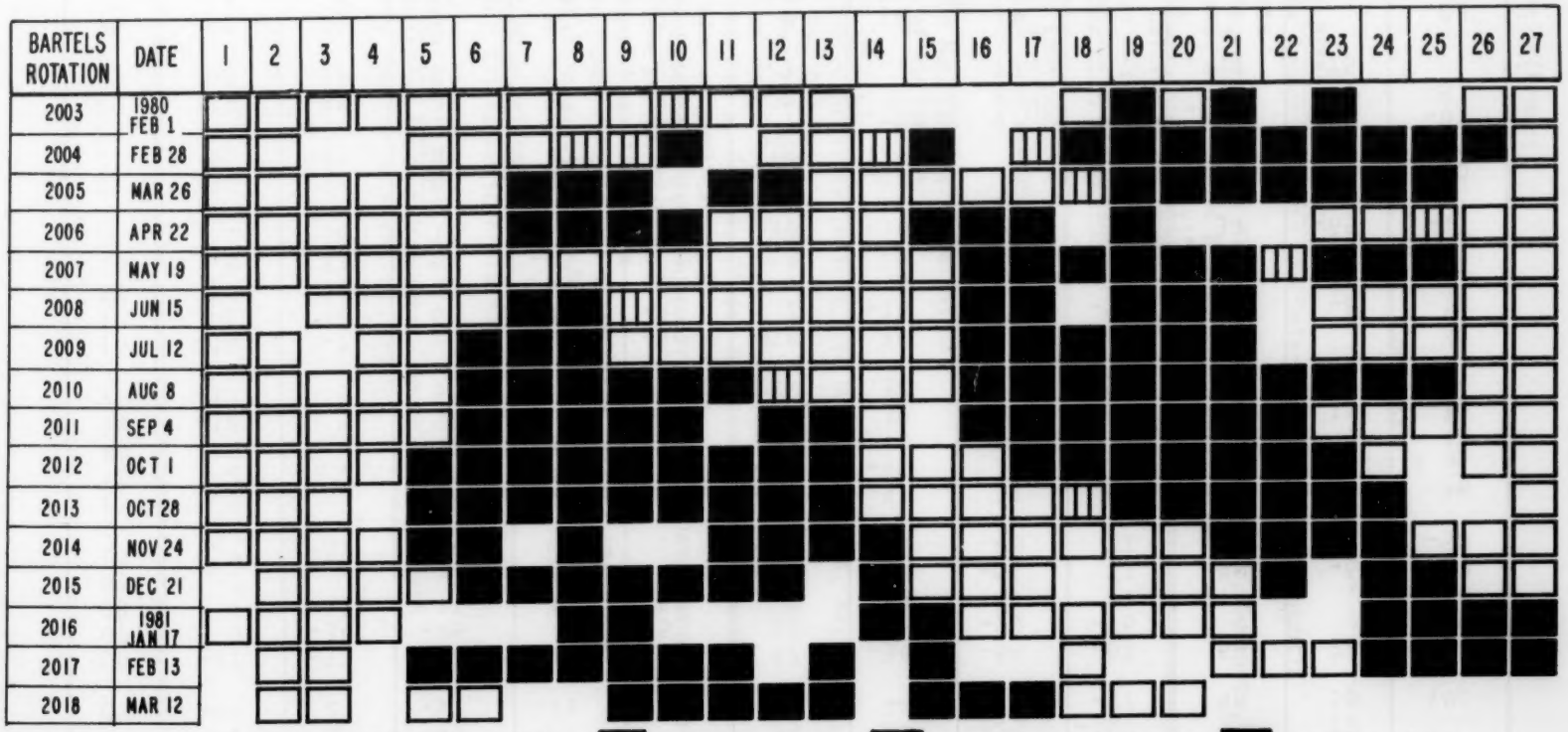
| BARTELS ROTATION | DATE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | NOV 17 | - | TA - | | | AT | | | | | * | | | | AT | | | | AT - | TA | - | | TA | | - | - | | |
| 2001 | DEC 14 | | | | - | | | | TA | | TA | - | - | AT - | | | | AT | | AT * | | | TA AT | T* | | | | - |
| 2002 | 1980 JAN 10 | | | | | | AT | | - | | - | | - | TA AT | | T* | | TA | AT | | | | | | TA | | A* | |
| 2003 | FEB 6 | | TA | | | - | | | | A* | | | | | | | TA | | | | - | | | * | TA | TA | | |
| 2004 | MAR 4 | | AT | | TA | | AT | | - | | TA | | - | | T* | | AT AT | | | TA | | AT | AT | TA | | | TA - | - |
| 2005 | MAR 31 | | TA | AT AT | AT | | AT | TA | | T* | | AT | | | | TA TA | | | | TA | | | TA | AT AT | AT AT | TA TA | | |
| 2006 | APR 27 | | AT | | | AT - | | | | | | TA | AT | | TA | | | TA AT | AT | | | | | | TA | AT | * | TA |
| 2007 | MAY 24 | | | AT | AT | | | * | * - | | - | - - | TA | | AT | | | | * | TA | | - | TA | | TA | | - TA | |
| 2008 | JUN 20 | | - | | | | AT | | | - - | | | | | - | - | | | | | | | TA | | TA | | TA | |
| 2009 | JUL 17 | | - | AT | | - | | | | | | - | | | TA TA | | - | AT AT | | | - | | - | - | - | - A* | - | - |
| 2010 | AUG 13 | | AT | | | | | - | AT - | | | | | | | - | | - AT | | | | | | TA | | - | A* | |
| 2011 | SEP 9 | | | | | | | TA | AT | | | | | | TA | TA | | | | | | | | | | TA | | |
| 2012 | OCT 6 | | | | | | | * | | TA | TA | | AT A* | | A* | | | | | | | TA | | | TA | | | |
| 2013 | NOV 2 | AT | | | | | TA | TA | | | | AT A* | | | | | | | | | - TA - | AT | | | | TA | | |
| 2014 | NOV 29 | | | | - | | | | | - | - | | | | TA | | TA TA | | AT | - | | AT | | | - | | TA | |
| 2015 | DEC 26 | | | | | | | | | - | - | | | | - | TA - | TA - | - | - | - | - | - | - | AT | AT | - | - | - |
| 2016 | 1981 JAN 22 | TA - | | | AT T* | | - | | - | AT TA | | | | | TA | | | | | - | | | | AT | | | TA | |
| 2017 | FEB 18 | | | AT | TA | | | | | | | | | TA | TA | | * | | | | | | | AT | | TA | TA | |
| 2018 | MAR 17 | | | | | | | AT | | | | | | - | | | | | | | | | | | | | | |

= definitely towards the sun  = definitely away from the sun

T = towards the sun  A = away from the sun  * = effect doubtful or not discernible  - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

# STANFORD MEAN SOLAR MAGNETIC FIELD




POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

# STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA )

| | 1980 | | | | | | | | 1981 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | APRIL | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. | JAN. | FEB. | MARCH |
| 01 | -10 | -7 | 37 | -51 | -5 | -19 | 44 | -41 | -82 | -111 | 33 | . |
| 02 | -26 | 9 | 13 | . | . | 5 | 59 | -94 | . | . | 20 | 54 |
| 03 | -21 | 26 | -16 | -25 | 8 | 8 | 53 | -120 | . | -33 | 64 | . |
| 04 | . | 55 | -45 | -23 | 7 | 29 | 26 | -123 | -100 | 7 | 72 | . |
| 05 | -44 | 21 | -57 | -19 | 10 | 42 | -4 | -111 | -97 | 46 | 58 | 102 |
| 06 | -17 | -13 | -42 | . | 24 | 42 | -36 | -84 | -67 | 66 | 28 | 81 |
| 07 | 9 | -34 | -25 | 8 | 53 | 23 | -62 | -99 | -16 | . | . | 39 |
| 08 | 4 | -42 | -11 | 11 | 53 | 9 | -73 | -107 | 41 | 116 | . | -11 |
| 09 | 7 | . | -1 | 13 | 44 | -27 | -72 | -61 | 71 | 49 | -6 | -28 |
| 10 | 7 | -17 | -6 | 23 | 37 | -68 | -39 | 28 | 77 | 13 | -24 | -50 |
| 11 | 5 | . | -18 | 44 | 27 | -77 | -41 | 27 | 57 | -29 | -42 | -58 |
| 12 | 2 | . | -4 | 42 | 8 | -84 | -45 | 38 | 28 | . | -26 | . |
| 13 | -15 | . | 12 | 34 | -37 | -62 | -10 | 26 | 3 | -39 | . | 18 |
| 14 | -18 | 5 | 56 | . | -63 | . | 10 | -1 | -52 | -13 | 15 | 35 |
| 15 | -12 | 5 | 54 | 57 | -65 | -39 | 38 | -21 | -93 | 8 | 24 | . |
| 16 | -14 | -1 | . | 26 | -56 | -16 | 20 | -50 | -86 | 18 | . | 37 |
| 17 | -8 | 16 | 63 | -42 | -44 | 7 | -15 | -68 | -51 | 62 | -8 | 12 |
| 18 | -10 | 50 | 71 | -69 | -24 | . | -8 | -81 | 26 | 67 | -19 | . |
| 19 | -5 | 73 | 55 | -43 | 1 | -18 | -2 | -63 | 37 | 67 | -62 | . |
| 20 | . | 78 | 15 | 5 | 23 | -38 | -16 | -24 | 39 | 37 | -65 | -41 |
| 21 | 30 | 92 | -40 | 32 | 24 | -31 | -14 | . | . | . | -76 | -80 |
| 22 | 95 | 120 | -43 | 47 | 11 | -15 | -17 | . | 51 | . | -70 | -119 |
| 23 | 113 | 122 | -1 | 53 | -11 | -7 | -8 | 97 | 41 | . | -68 | -87 |
| 24 | 113 | 46 | 33 | 57 | -31 | -22 | 31 | 80 | 28 | -52 | . | -81 |
| 25 | 100 | 14 | 49 | 53 | -38 | -21 | . | 70 | 7 | -87 | -75 | . |
| 26 | 56 | 25 | 37 | 27 | -27 | 8 | 54 | 31 | -13 | . | . | -88 |
| 27 | 8 | 64 | 46 | -8 | -27 | 18 | 52 | 28 | -20 | . | -8 | -52 |
| 28 | -27 | 57 | 54 | -33 | -18 | 18 | 48 | -3 | -42 | . | . | -20 |
| 29 | -28 | 62 | 6 | -42 | -14 | 18 | 44 | -26 | -65 | . | | 31 |
| 30 | -16 | 49 | -22 | -29 | -18 | 25 | 57 | . | -88 | -59 | | 45 |
| 31 | | 49 | | -6 | -10 | | . | | -95 | -4 | | 55 |

DOT SYMBOL INDICATES NO DATA AVAILABLE FOR THE DAY.

# FEBRUARY 1981 DATA

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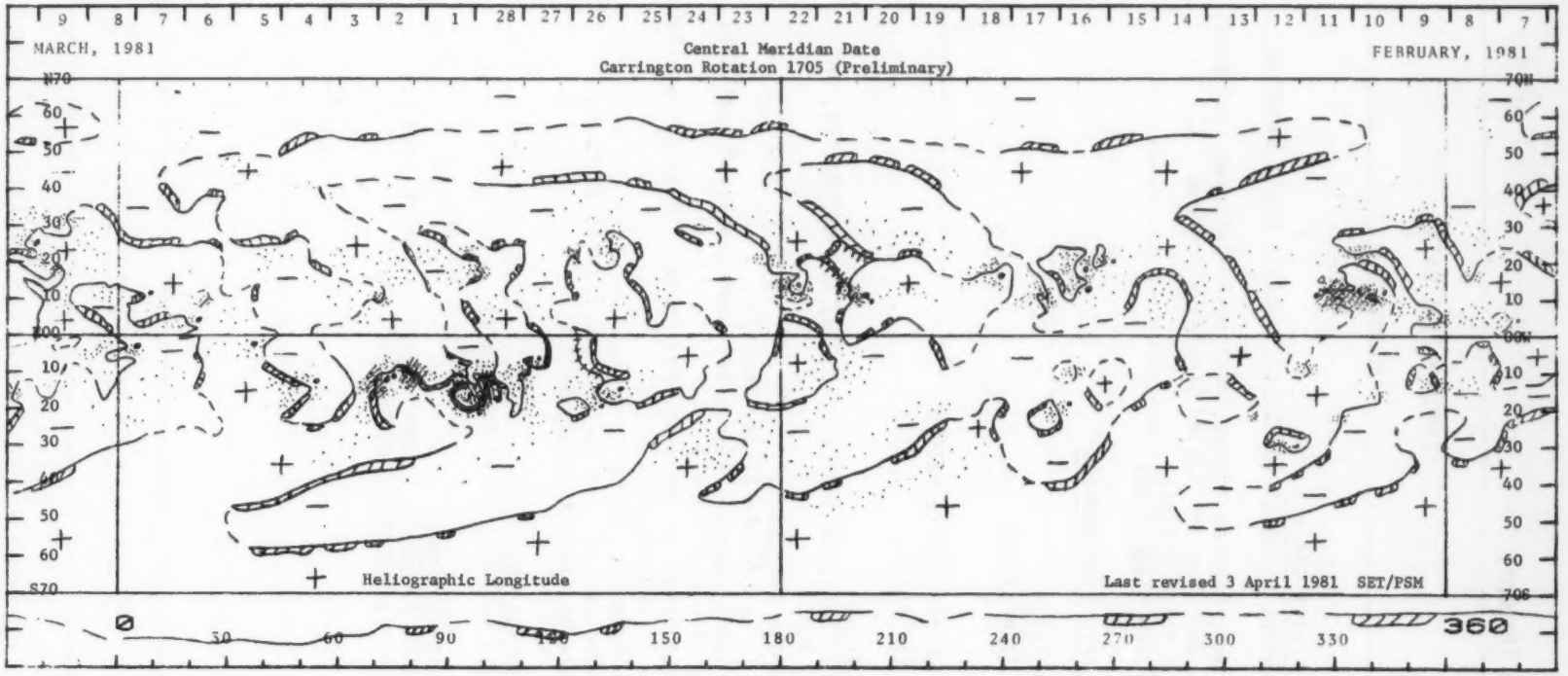
DOT SYMBOL INDICATES NO DATA AVAILABLE FOR THE DAY.

# Hα SYNOPTIC CHART

## CARRINGTON ROTATION 1705 (PRELIMINARY)

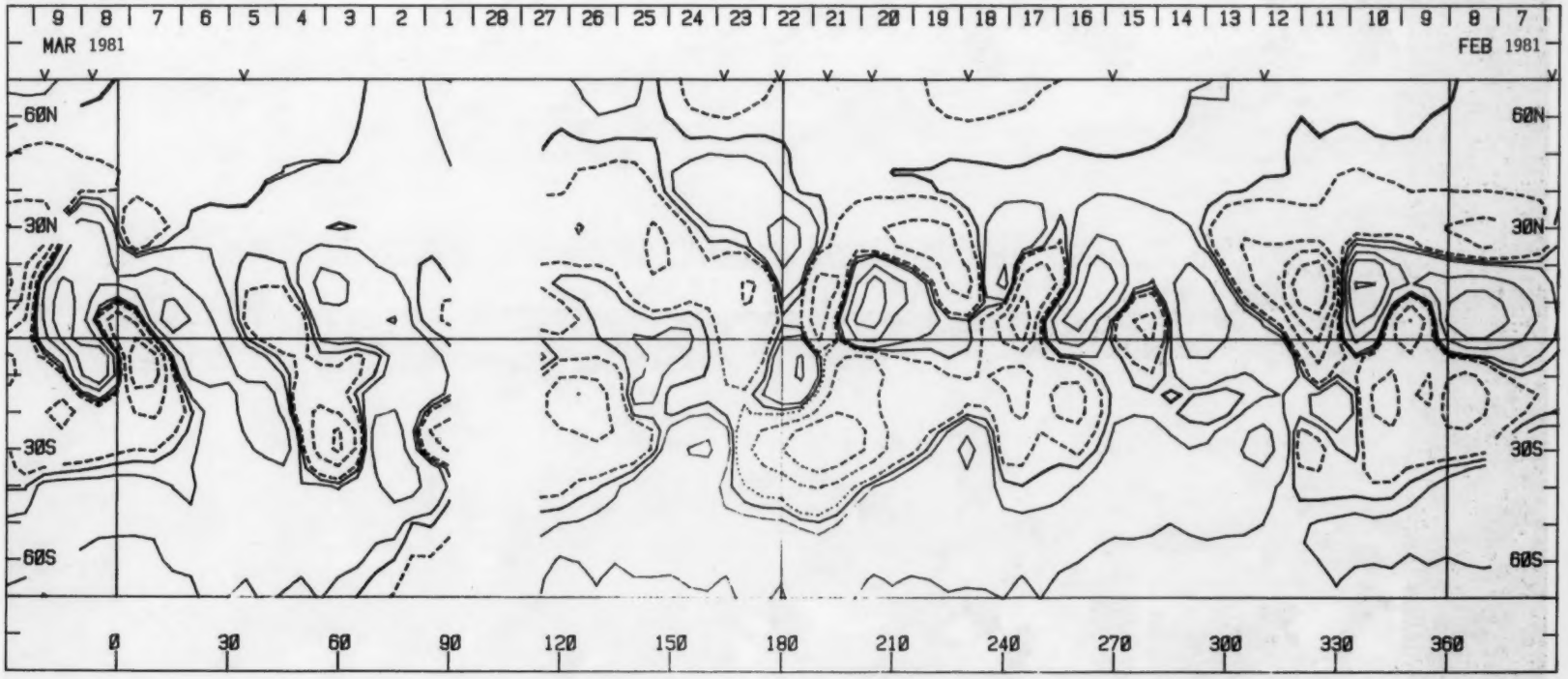


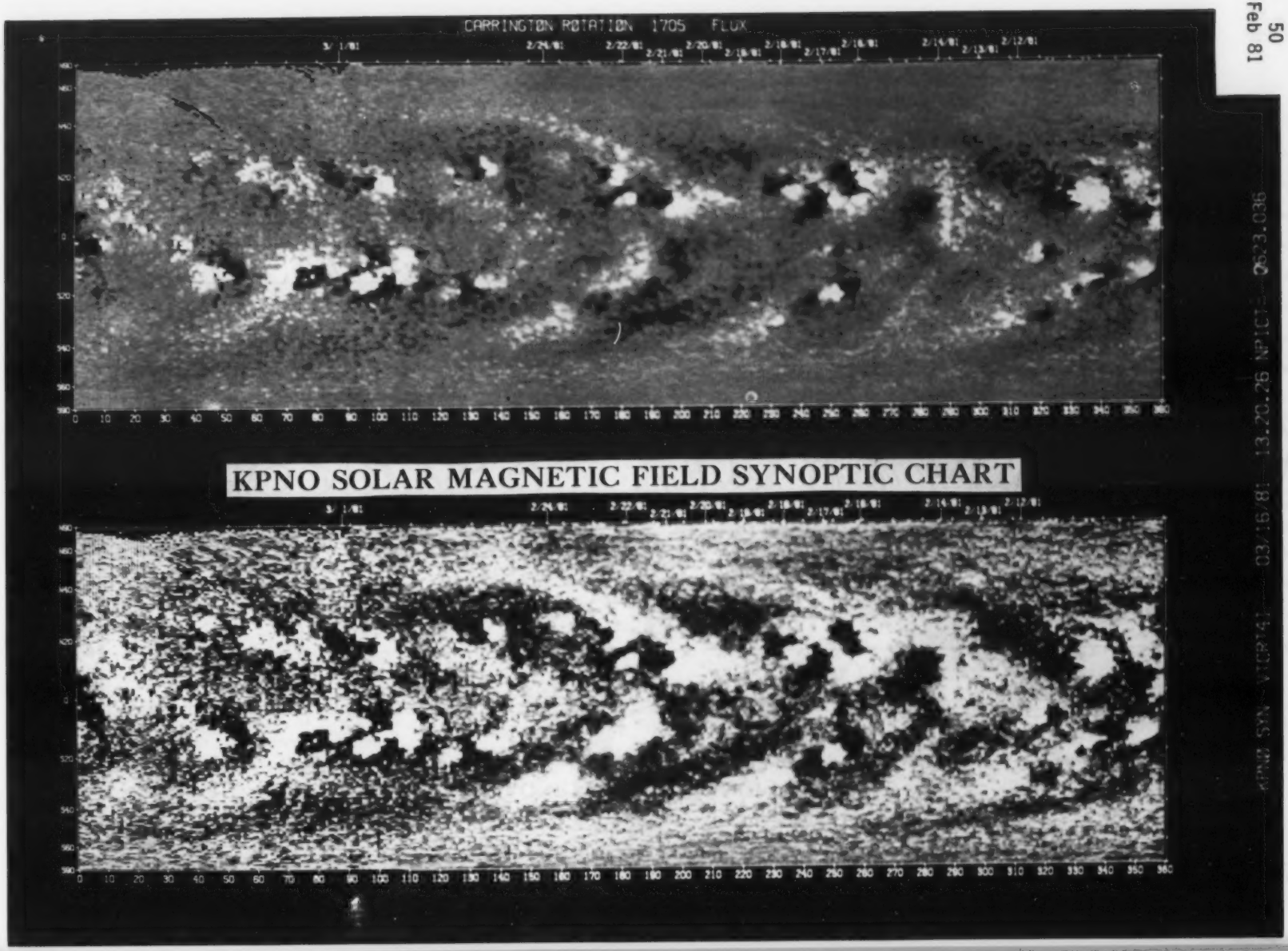
## SOLAR MAGNETIC FIELD SYNOPTIC CHART

## CARRINGTON ROTATION 1705

Stanford Solar Observatory

0,±100,200,500... μT

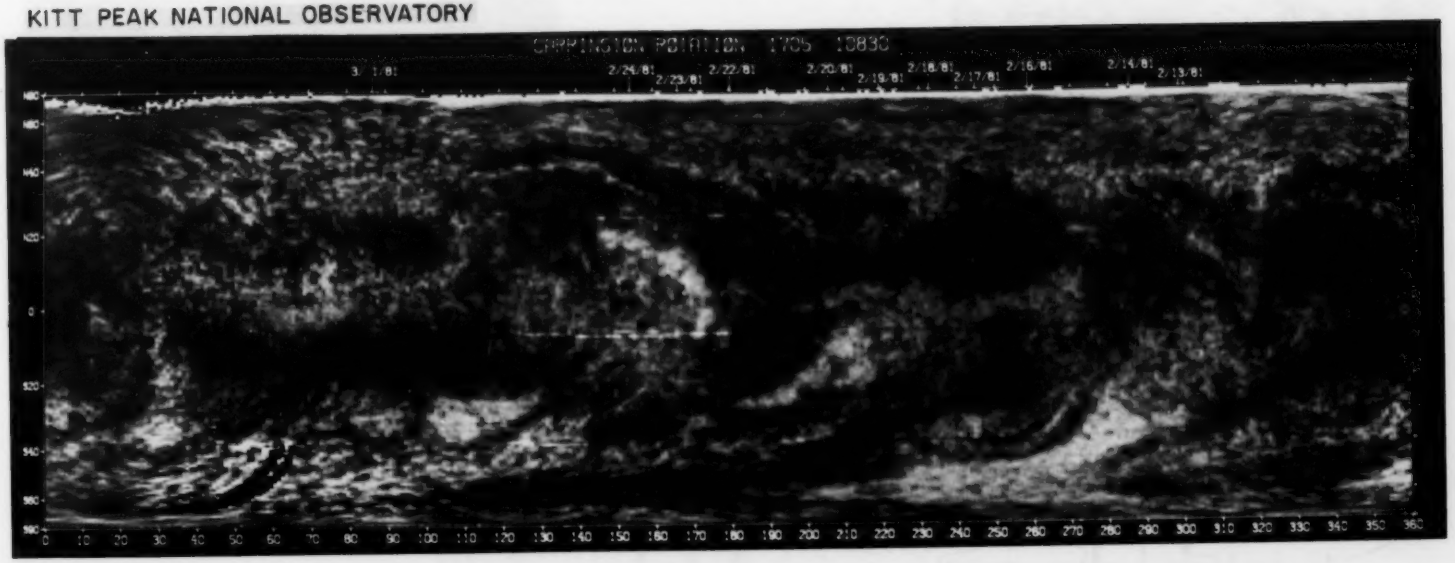



CARRINGTON ROTATION 1705 FLUX
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

50
Feb 81

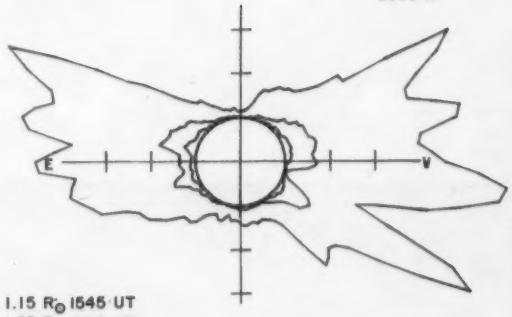
# HELIUM 10830Å SYNOPTIC MAPS
# CARRINGTON ROTATION 1705

KITT PEAK NATIONAL OBSERVATORY



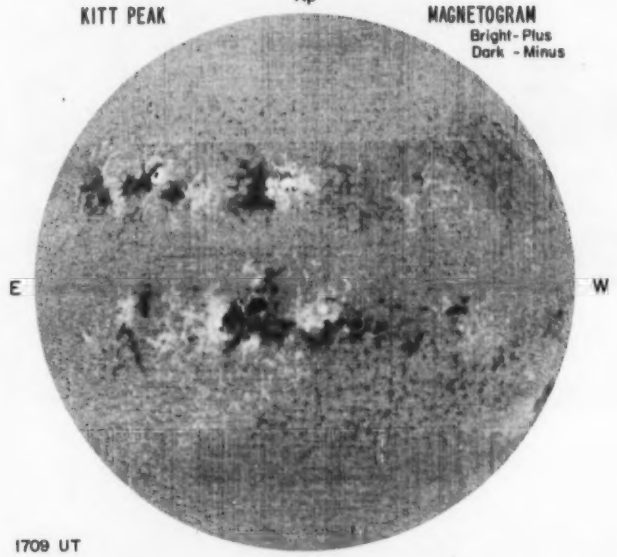
FEBRUARY 1, 1981 (P=-12.18, $B_o$=-6.04, $L_o$=106.26)

SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1545 UT
1.35 $R_\odot$ 1554 UT
1.55 $R_\odot$ 1603 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



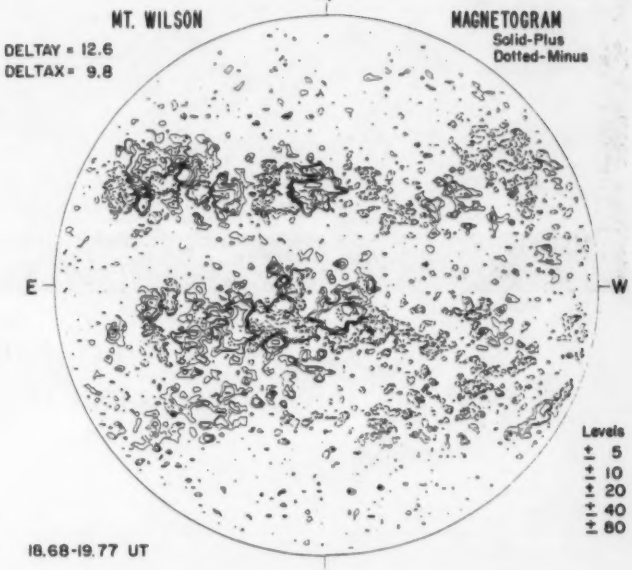

1709 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.8




18.68-19.77 UT

Sp

01

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

01

BOULDER

Np

Hα

E

W

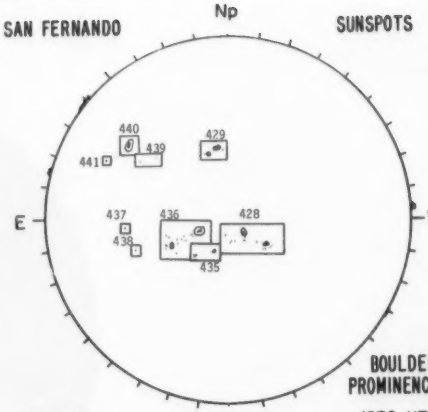
1639 UT

Sp

SAN FERNANDO

Np

SUNSPOTS




E

W

1830 UT

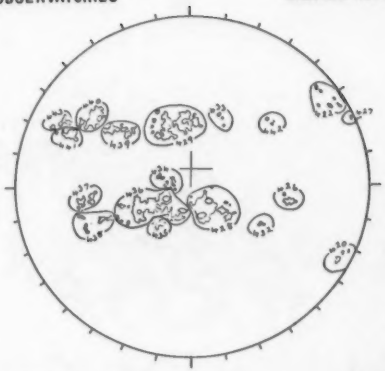
Sp

BOULDER PROMINENCES

1639 UT

HALE OBSERVATORIES

Np



E

W

1929 UT

Sp

CALCIUM REPORT

| | GOOD | JA |
|---|---|---|
| 20 | 0400 | 2.5 |
| 22 | 0500 | 2.5 |
| 26 | 0400 | 3.0 |
| 27 | 0100 | 2.5 |
| 28 | 2500 | 4.0 |
| 29 | 2900 | 3.5 |
| 32 | 0100 | 2.5 |
| 33 | 0200 | 2.5 |
| 34 | 0400 | 3.0 |
| 35 | 0400 | 3.5 |
| 36 | 3600 | 3.5 |
| 37 | 0700 | 3.0 |
| 38 | 0600 | 3.0 |
| 39 | 1000 | 3.0 |
| 40 | 1600 | 3.5 |
| 41 | 0800 | 3.0 |
| 42 | 0100 | 2.5 |
| 43 | 0500 | 3.0 |

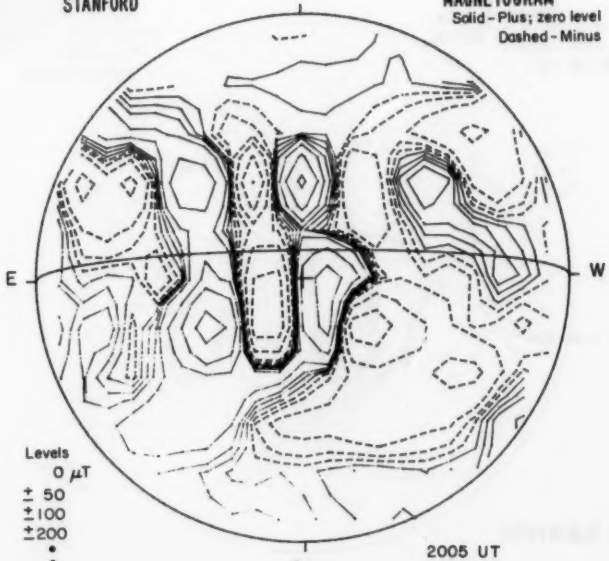
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

2005 UT

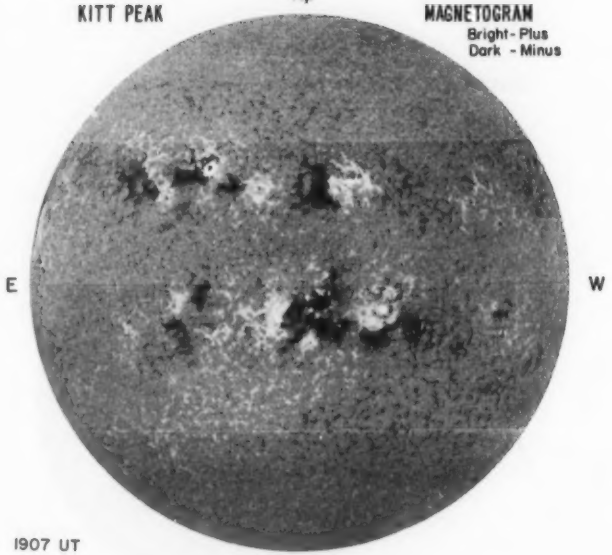
Sp

FEBRUARY 2, 1981 (P=-12.59, $B_o$=-6.11, $L_o$=93.09)

SACRAMENTO PEAK Np CORONA
5303 Å

NO DATA FEBRUARY 2, 3, 6, 9, 10, 15, 17, 20, 23, 26, 27, 28

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

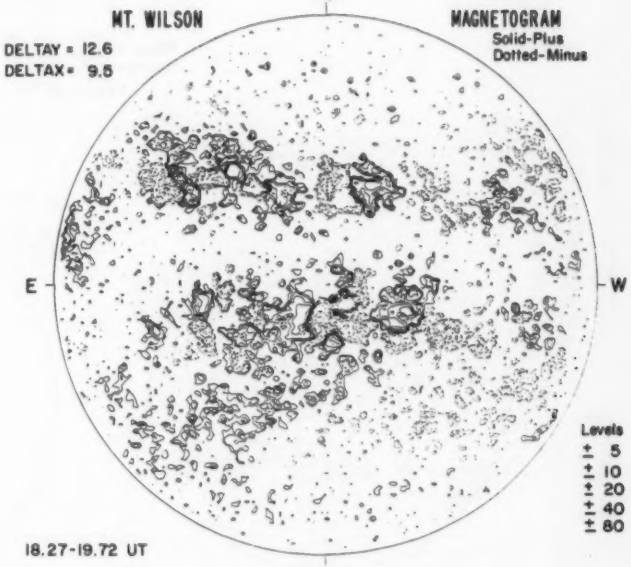



1907 UT

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX = 9.5

Sp
Np




18.27-19.72 UT

Sp

02

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1907 UT

Sp

18.27-19.72 UT

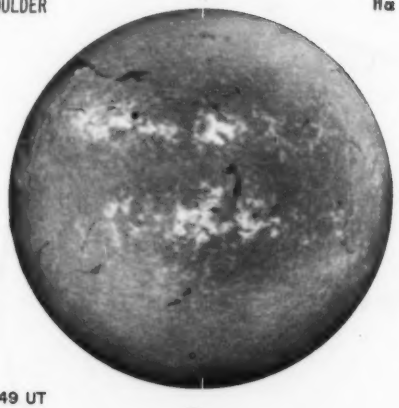
Sp

02

BOULDER

Np

Hα



E

W

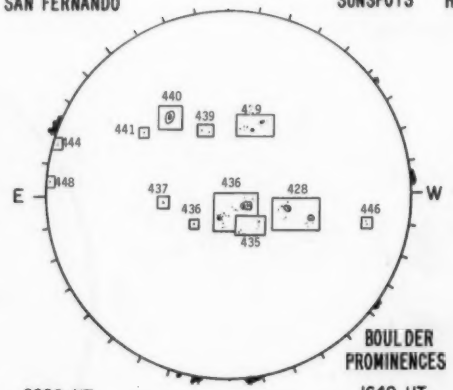
1649 UT

Sp

SAN FERNANDO

Np

SUNSPOTS




E

W

2020 UT

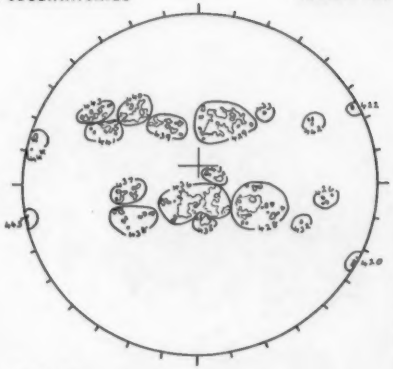
Sp

BOULDER PROMINENCES

1649 UT

HALE OBSERVATORIES

Np



E

W

1928 UT

Sp

CALCIUM REPORT

| GOOD | | JA |
|---|---|---|
| 26 | 0300 | 3.0 |
| 28 | 2500 | 3.5 |
| 29 | 2900 | 3.5 |
| 32 | 0100 | 2.5 |
| 34 | 0300 | 3.0 |
| 35 | 0400 | 3.0 |
| 36 | 3000 | 3.5 |
| 37 | 0700 | 3.0 |
| 38 | 0600 | 3.0 |
| 39 | 1000 | 3.5 |
| 40 | 1600 | 3.5 |
| 41 | 0900 | 3.0 |
| 42 | 0100 | 2.0 |
| 43 | 1200 | 3.0 |
| 44 | 0300 | 3.0 |
| 45 | 0200 | 2.5 |

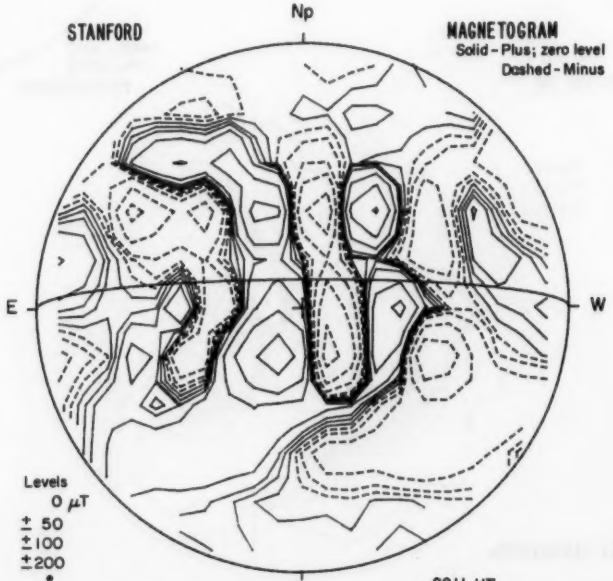
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

2211 UT

Sp

FEBRUARY 3, 1981 (P=-12.99, $B_o$=-6.18, $L_o$=79.93)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

E NO DATA FEBRUARY 3, 6, 7, 8, 9, 10, 25, 26, 27, 28 W

Sp

Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

E W

Levels
± 5
± 10
± 20
± 40
± 80

22.15-23.59 UT

Sp

03

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

22.15-23.59 UT

Np

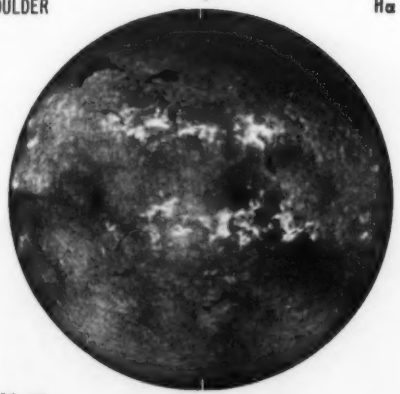
Sp

± 60

03

BOULDER

Np



E W

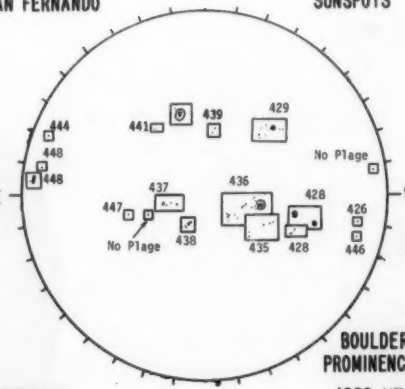
1620 UT

Sp

Hα

SAN FERNANDO

Np




E W

1930 UT

Sp

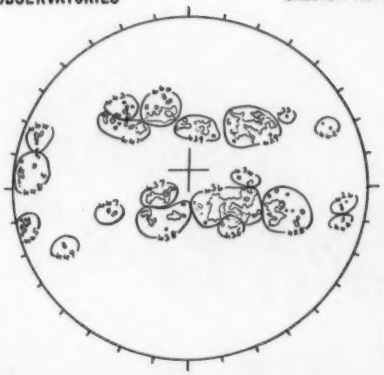
SUNSPOTS

BOULDER PROMINENCES

1620 UT

HALE OBSERVATORIES

Np



E W

1930 UT

Sp

CALCIUM REPORT

| GOOD | | JA |
|---|---|---|
| 28 | 2000 | 3.5 |
| 29 | 2400 | 3.0 |
| 34 | 0200 | 3.0 |
| 35 | 0500 | 3.0 |
| 36 | 3200 | 3.5 |
| 37 | 0700 | 3.0 |
| 38 | 0900 | 3.0 |
| 39 | 1000 | 3.0 |
| 40 | 1600 | 3.5 |
| 41 | 1100 | 3.0 |
| 43 | 0500 | 2.5 |
| 44 | 0400 | 3.0 |
| 45 | 0400 | 3.0 |
| 46 | 0100 | 2.5 |
| 47 | 0200 | 3.0 |
| 48 | 0800 | 3.0 |
| 49 | 0100 | 2.5 |

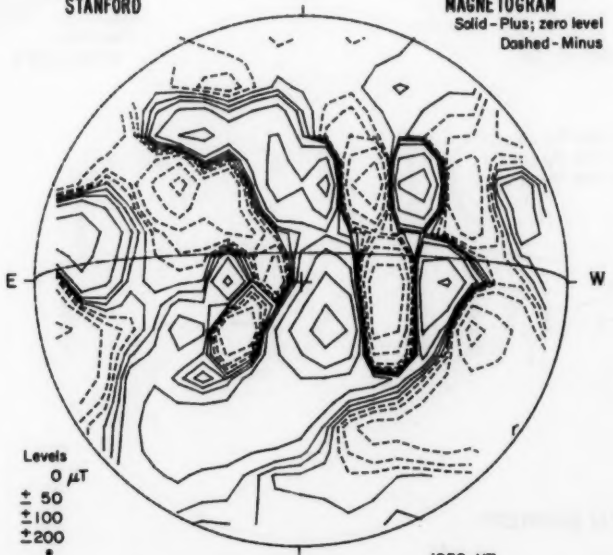
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

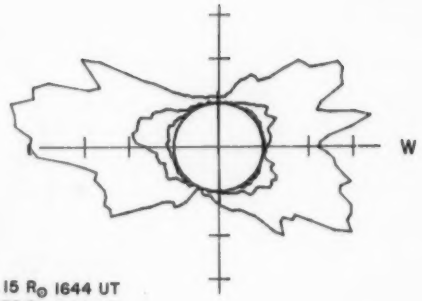
±200

Sp

1950 UT

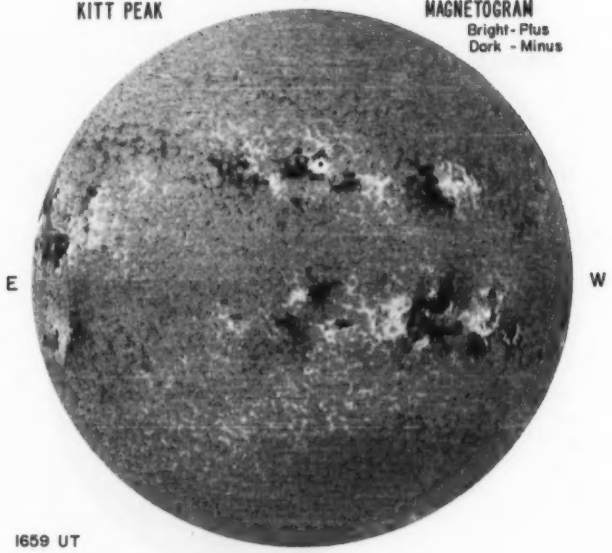
FEBRUARY 4, 1981 (P=-13.39, $B_o$=-6.25, $L_o$=66.76)

SACRAMENTO PEAK Np CORONA 5303 Å



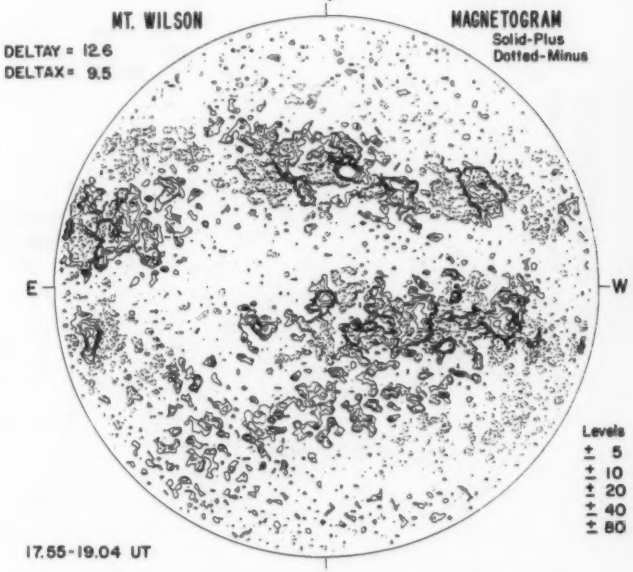

1.15 $R_\odot$ 1644 UT
1.35 $R_\odot$ 1624 UT
1.55 $R_\odot$ 1633 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus




1659 UT

Sp
Np
MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus
DELTAY = 12.6
DELTAX = 9.5




17.55-19.04 UT

04

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

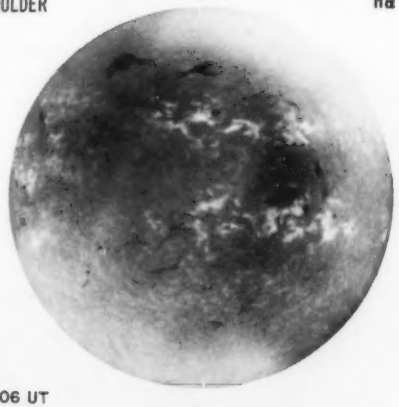
Sp

Sp

04

BOULDER

Np



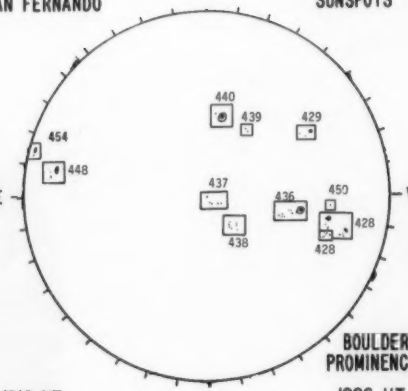
E W

1906 UT

Sp

Hα SAN FERNANDO

Np




E W

1910 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

1906 UT

HALE OBSERVATORIES

Np

E W

1837 UT

Sp

CALCIUM REPORT

| | GOOD | | JA |
|---|---|---|---|
| 28 | 2100 | | 3.5 |
| 29 | 2500 | | 3.5 |
| 34 | 0100 | | 3.0 |
| 35 | 0400 | | 3.5 |
| 36 | 3300 | | 3.5 |
| 37 | 0600 | | 3.5 |
| 38 | 0600 | | 3.0 |
| 39 | 1000 | | 3.5 |
| 40 | 1900 | | 3.5 |
| 41 | 1000 | | 3.0 |
| 43 | 0400 | | 3.0 |
| 44 | 0700 | | 3.0 |
| 45 | 1100 | | 3.0 |
| 47 | 0100 | | 2.5 |
| 48 | 2000 | | 3.0 |
| 50 | 0300 | | 3.0 |
| 51 | 0100 | | 3.0 |
| 53 | 0400 | | 3.0 |
| 54 | 0200 | | 3.0 |

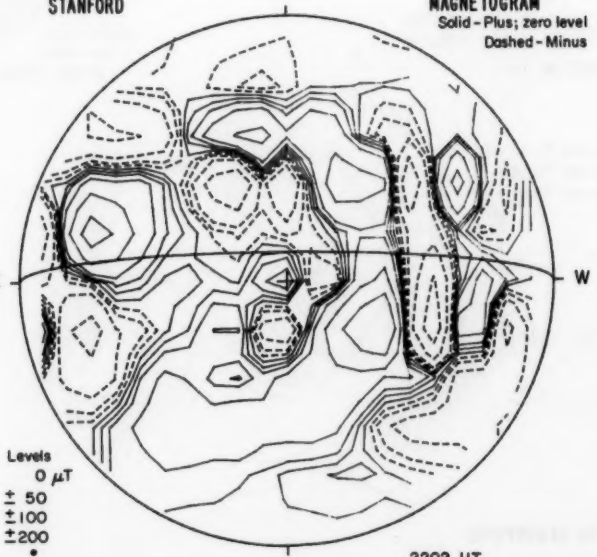
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

•

•

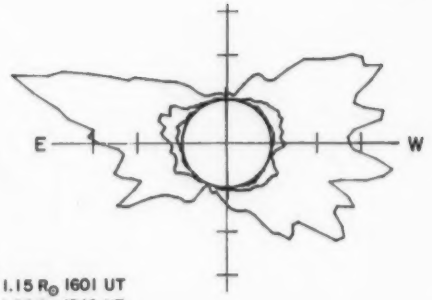
•

2202 UT

Sp

FEBRUARY 5, 1981 (P=-13.78, $B_o$=-6.31, $L_o$=53.59)

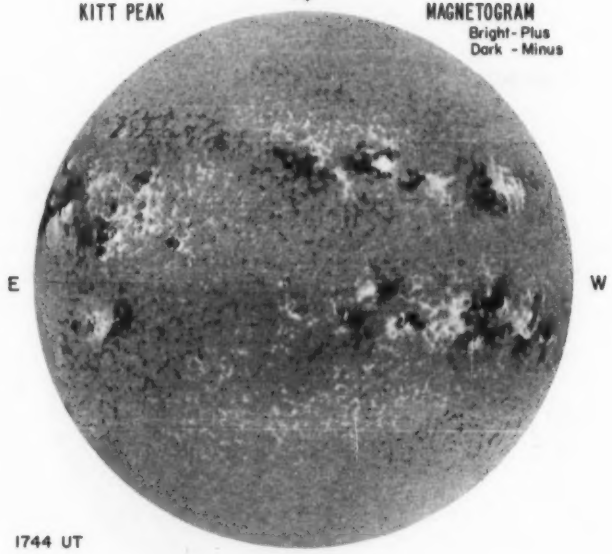
SACRAMENTO PEAK Np CORONA
5303 Å




1.15 $R_\odot$ 1601 UT
1.35 $R_\odot$ 1540 UT
1.55 $R_\odot$ 1550 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



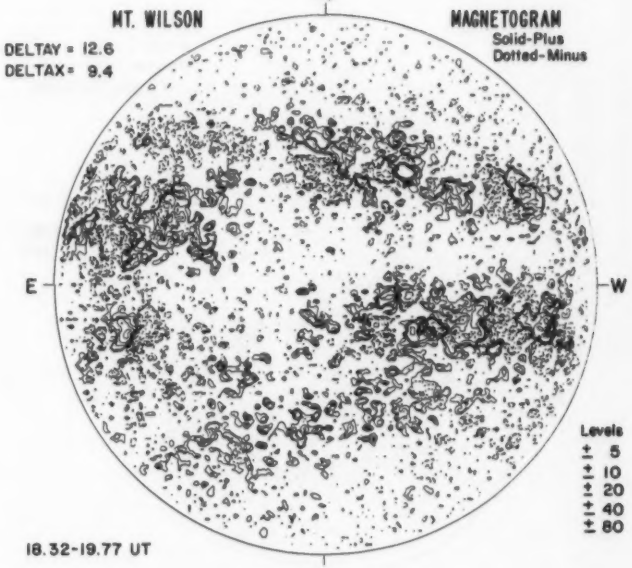

1744 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4




18.32-19.77 UT

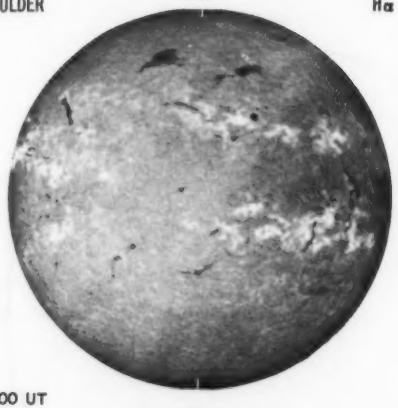
Sp

05

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

05

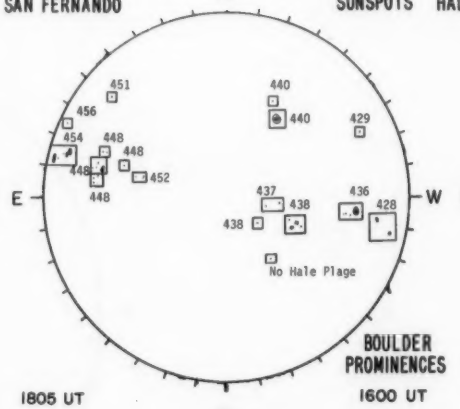
BOULDER




1600 UT

Hα

SAN FERNANDO



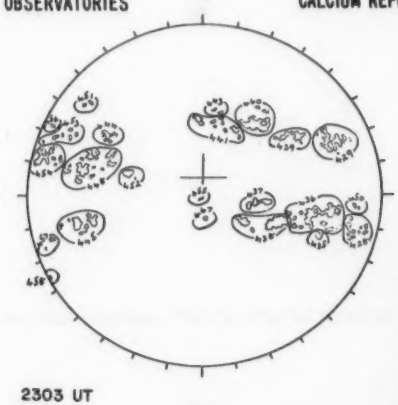

1805 UT

SUNSPOTS

HALE OBSERVATORIES

BOULDER PROMINENCES

1600 UT




2303 UT

CALCIUM REPORT

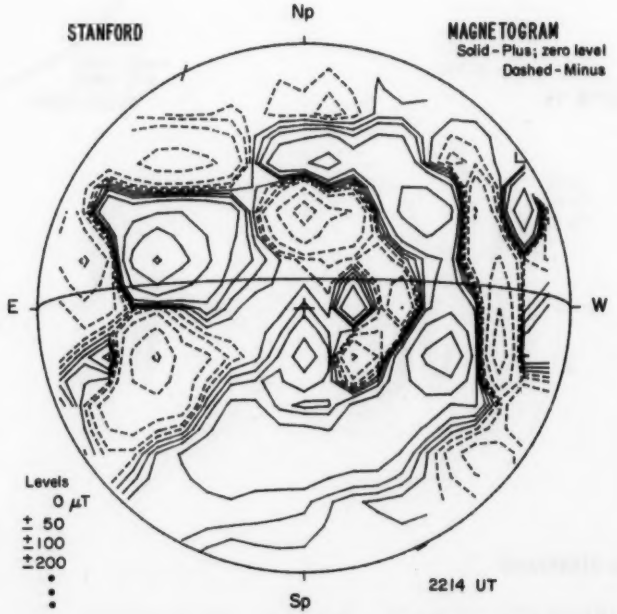
| | GOOD | JA |
|---|---|---|
| 28 | 0900 | 4.0 |
| 29 | 1900 | 3.0 |
| 35 | 0300 | 3.0 |
| 36 | 2600 | 3.0 |
| 37 | 0600 | 3.0 |
| 38 | 1400 | 3.0 |
| 39 | 0800 | 3.0 |
| 40 | 1500 | 3.0 |
| 41 | 0800 | 3.0 |
| 43 | 0200 | 2.5 |
| 44 | 0400 | 3.0 |
| 45 | 1500 | 3.0 |
| 47 | 0100 | 3.0 |
| 48 | 2000 | 3.0 |
| 50 | 0200 | 2.5 |
| 51 | 0200 | 2.5 |
| 52 | 0400 | 3.0 |
| 53 | 0600 | 3.0 |
| 54 | 1600 | 3.5 |
| 55 | 0100 | 2.5 |
| 56 | 0200 | 3.0 |
| 57 | 0300 | 2.5 |
| 58 | 0100 | 3.0 |

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus




2214 UT

FEBRUARY 6, 1981 (P=-14.16, $B_o$=-6.37, $L_o$=40.43)

SACRAMENTO PEAK Np CORONA 5303 Å

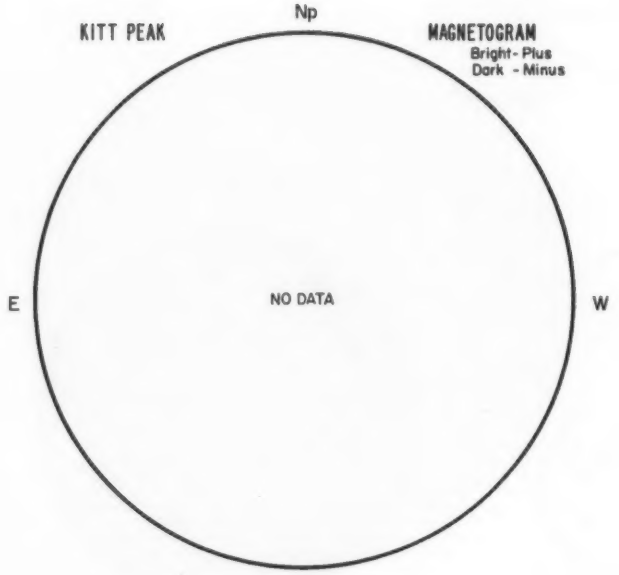
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus




MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA FEBRUARY 6, 8, 9, 11, 13, 15, 24, 25, 26, 28 W

Sp

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

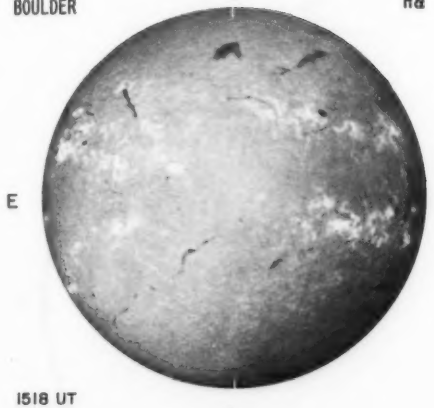
06

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

06

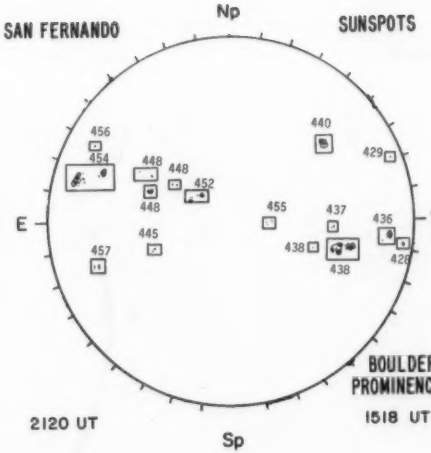
BOULDER




1518 UT

Hα

SAN FERNANDO

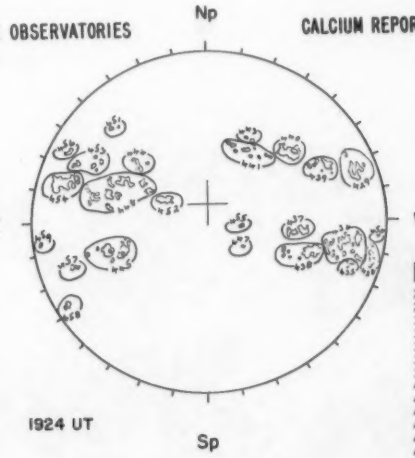



2120 UT

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

1518 UT




1924 UT

CALCIUM REPORT

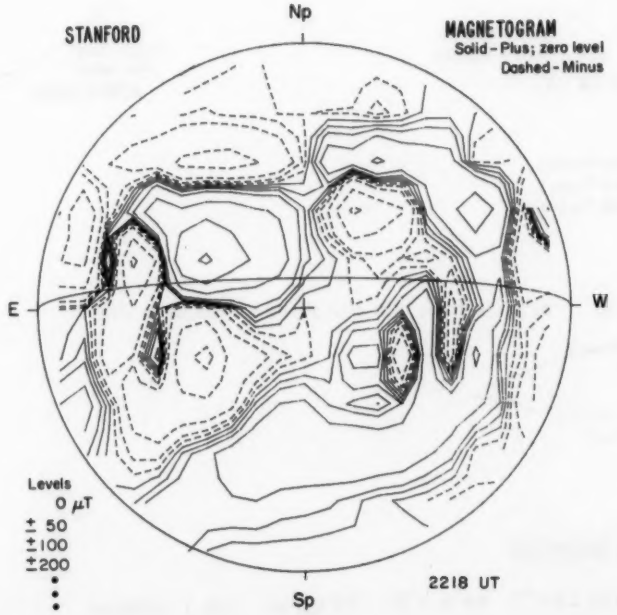
| GOOD | | JA |
|---|---|---|
| 28 | 0800 | 3.0 |
| 29 | 1000 | 3.0 |
| 35 | 0300 | 3.0 |
| 36 | 2300 | 3.0 |
| 37 | 0600 | 3.0 |
| 38 | 1200 | 3.0 |
| 39 | 0700 | 3.0 |
| 40 | 1200 | 3.5 |
| 41 | 0600 | 3.0 |
| 43 | 0200 | 2.5 |
| 44 | 0400 | 3.0 |
| 45 | 1400 | 3.0 |
| 48 | 2300 | 3.0 |
| 50 | 0100 | 3.0 |
| 51 | 0200 | 2.5 |
| 52 | 0500 | 3.0 |
| 53 | 0600 | 3.0 |
| 54 | 1700 | 3.5 |
| 55 | 0100 | 3.0 |
| 56 | 0300 | 3.0 |
| 57 | 0300 | 3.0 |
| 58 | 0300 | 3.0 |
| 59 | 0200 | 3.0 |

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

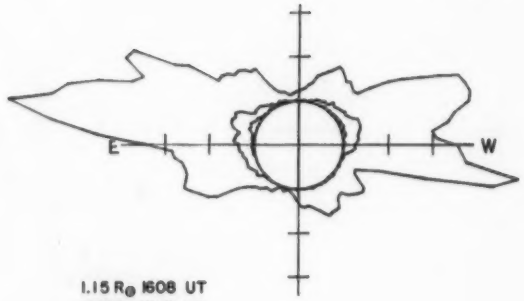
Dashed - Minus




2218 UT

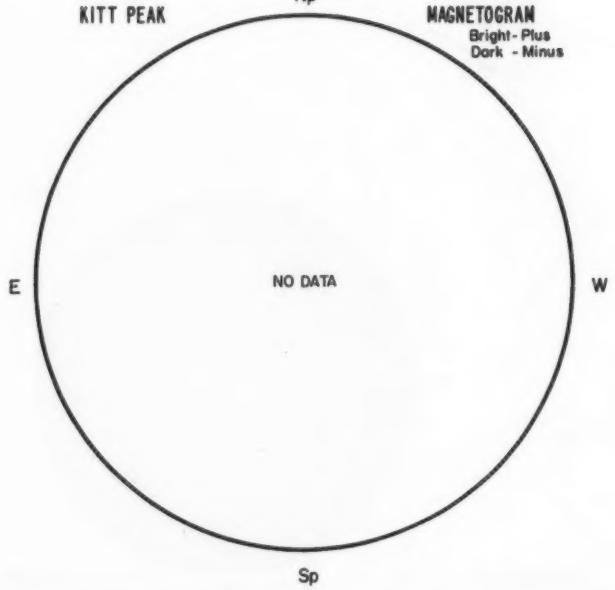
FEBRUARY 7, 1981 (P=-14.55, $B_o$=-6.44, $L_o$=27.26)

SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1608 UT
1.35 $R_\odot$ 1548 UT
1.55 $R_\odot$ 1557 UT

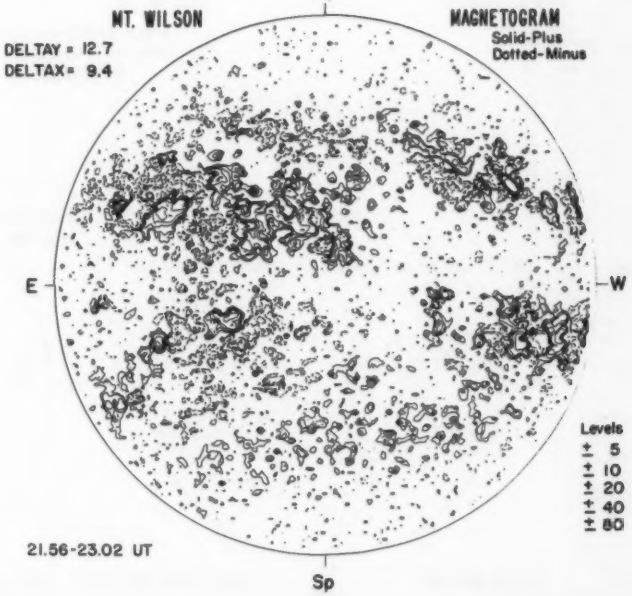
KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus




Sp

Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4




21.56-23.02 UT

Sp

07

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

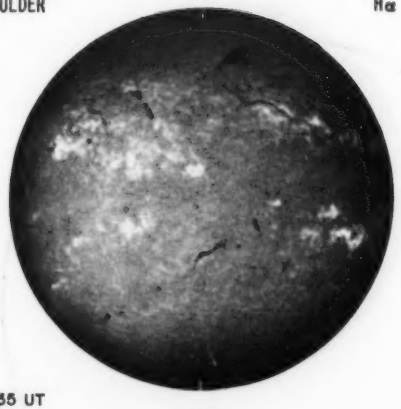
Sp

07

BOULDER

Np

Hα



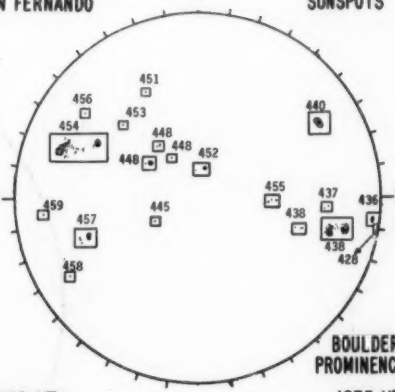
E W

1635 UT

Sp

SAN FERNANDO

Np




E W

1930 UT

Sp

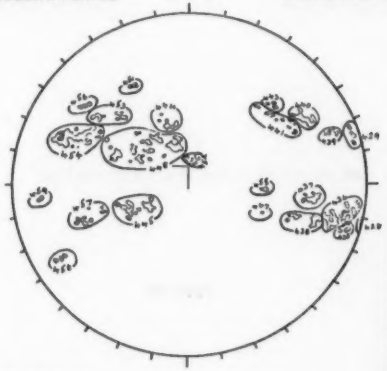
SUNSPOTS

BOULDER PROMINENCES

1635 UT

HALE OBSERVATORIES

Np



E W

2152 UT

Sp

CALCIUM REPORT

| | FAIR | JA |
|---|---|---|
| 29 | 0800 | 2.5 |
| 36 | 2300 | 3.5 |
| 37 | 0600 | 3.0 |
| 38 | 0700 | 3.5 |
| 39 | 0400 | 3.0 |
| 40 | 1000 | 3.0 |
| 41 | 0500 | 3.0 |
| 43 | 0200 | 3.0 |
| 44 | 0500 | 2.5 |
| 45 | 1200 | 3.5 |
| 48 | 2500 | 3.0 |
| 51 | 0200 | 2.5 |
| 52 | 0400 | 3.0 |
| 53 | 0600 | 3.0 |
| 54 | 1800 | 3.5 |
| 55 | 0200 | 3.0 |
| 56 | 0300 | 3.0 |
| 57 | 0500 | 2.5 |
| 58 | 0300 | 2.5 |

STANFORD

Np

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

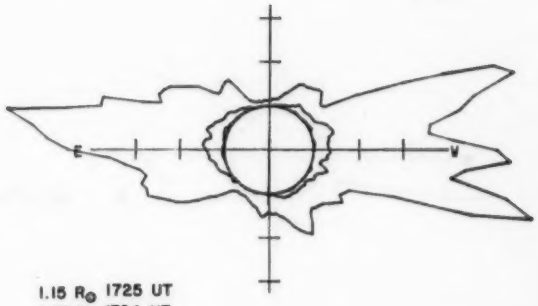
±100

±200

E NO DATA FEBRUARY 7, 8, 9, 11, 13, 14, 16, 17, 19, 24, 25, 26, 27, 28 W

FEBRUARY 8, 1981 (P=-14.92, $B_o$=-6.49, $L_o$=14.10)

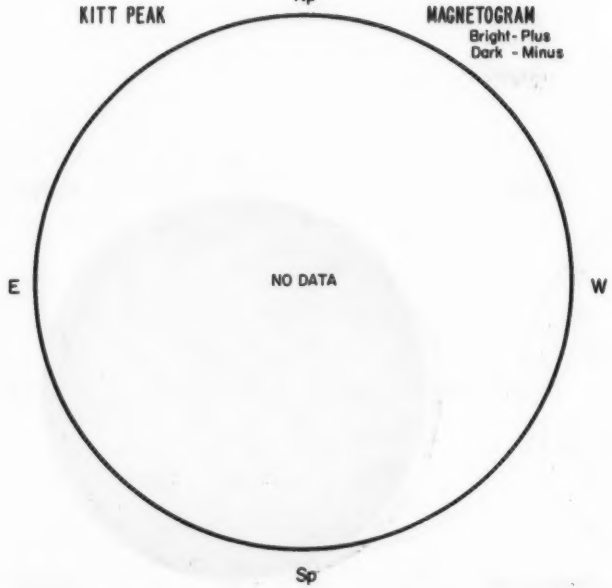
SACRAMENTO PEAK Np CORONA
5303 Å




1.15 $R_\odot$ 1725 UT
1.35 $R_\odot$ 1704 UT
1.55 $R_\odot$ 1714 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus




Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

08

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

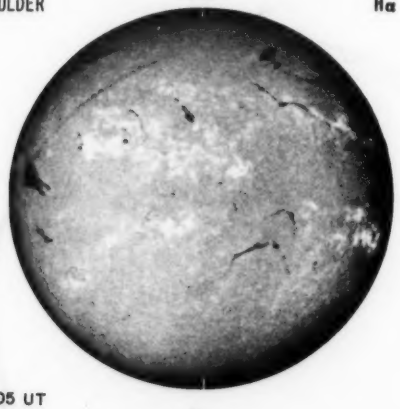
Sp

08

BOULDER

Np

Hα



E

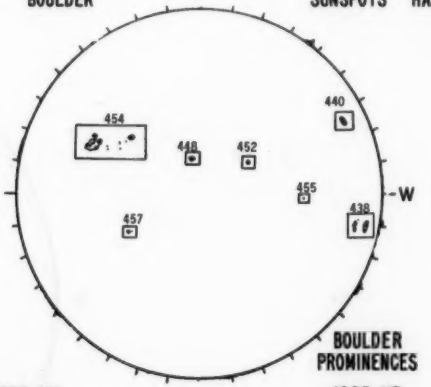
W

1605 UT

Sp

BOULDER

Np




E

W

1600 UT

Sp

SUNSPOTS HALE OBSERVATORIES

Np

E

W

1605 UT

Sp

CALCIUM REPORT

NO DATA FEBRUARY 8, 9, 11, 24, 25, 26, 28

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

67

Feb 81

FEBRUARY 9, 1981 (P=-15.30, $B_o$=-6.55, $L_o$=0.93)

SACRAMENTO PEAK Np CORONA
5303 Å

E NO DATA W

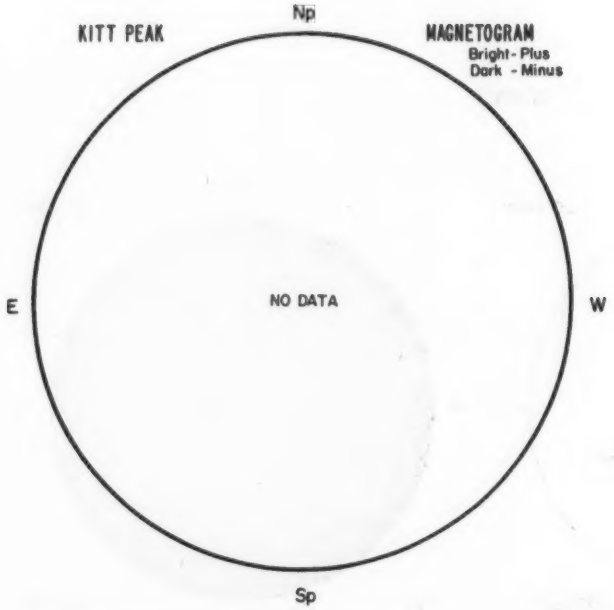
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp
Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

NT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =




E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

09

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

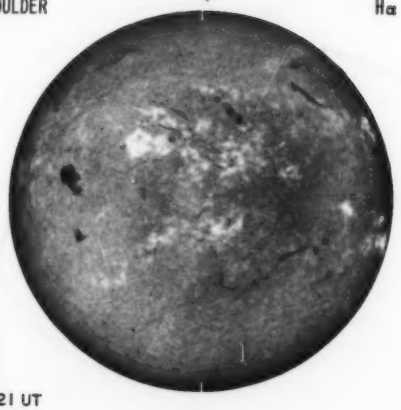
Sp

09

BOULDER

Np

Hα



E

W

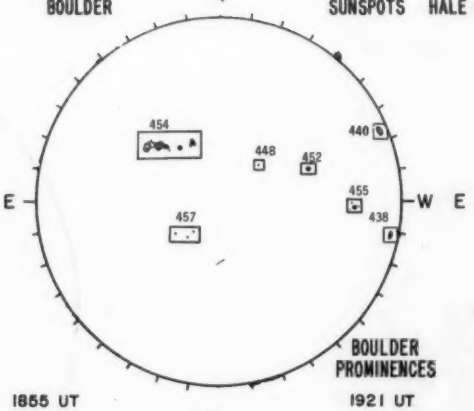
1921 UT

Sp

BOULDER

Np

SUNSPOTS HALE OBSERVATORIES




E

W

E

BOULDER PROMINENCES

1855 UT

1921 UT

Sp

Np

CALCIUM REPORT

NO DATA

E

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

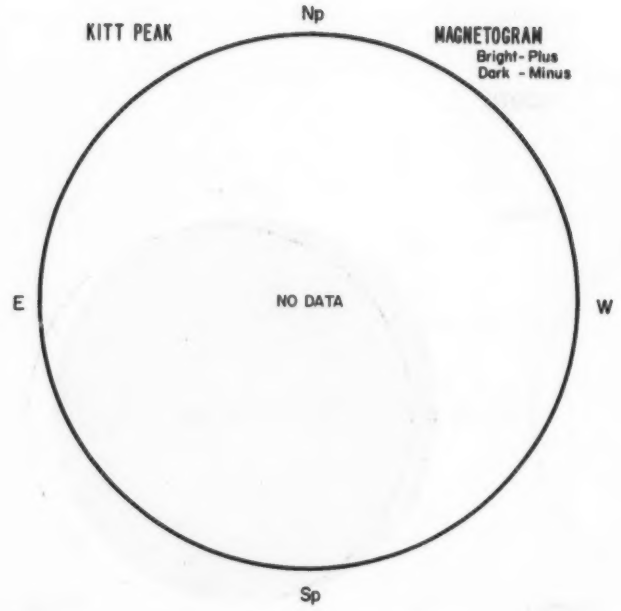
Sp

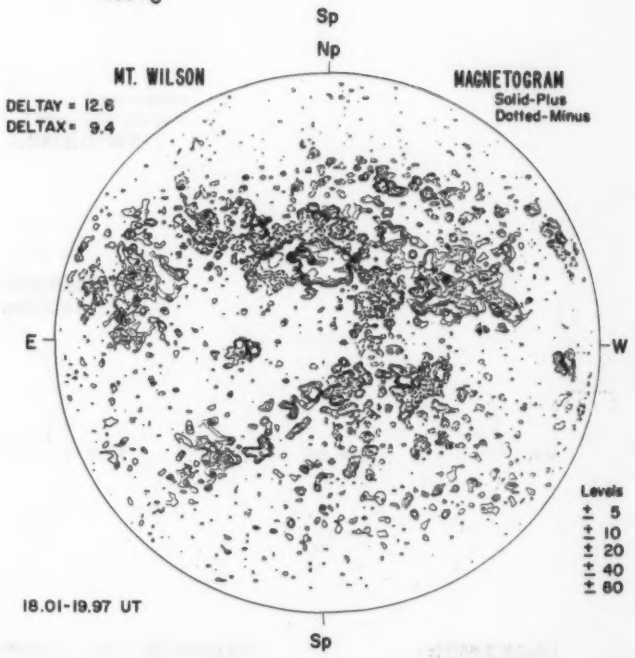
FEBRUARY 10, 1981 (P=-15.66, $B_o$=-6.60, $L_o$=347.76)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$




10

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

10

BOULDER

Np

Hα

E

NO DATA

W

Sp

SAN FERNANDO

Np

451
456
454
461
462
448
448
448
452
459
445
455
457
465

E

W

2050 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

E

W

1900 UT

Sp

CALCIUM REPORT

| GOOD | | JA |
|---|---|---|
| 37 | 0300 | 2.5 |
| 38 | 0400 | 2.5 |
| 40 | 0400 | 2.5 |
| 41 | 0400 | 2.5 |
| 45 | 1000 | 3.0 |
| 48 | 2700 | 3.5 |
| 51 | 0200 | 3.5 |
| 52 | 0300 | 3.0 |
| 53 | 0600 | 3.0 |
| 54 | 5100 | 3.5 |
| 55 | 0500 | 3.0 |
| 56 | 0300 | 3.0 |
| 57 | 0600 | 3.0 |
| 58 | 0500 | 3.0 |
| 59 | 0300 | 3.0 |
| 61 | 0500 | 3.5 |

BOULDER PROMINENCES

NO DATA

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

W

Levels

0 μT

± 50

±100

±200

Sp

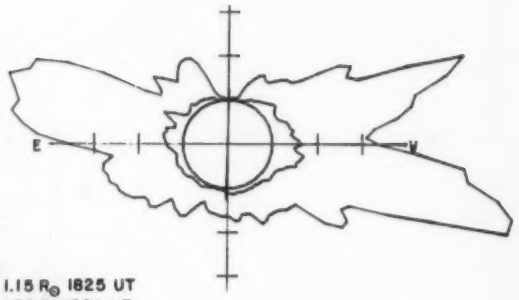
2214 UT

71

Feb 81

FEBRUARY 11, 1981 (P=-16.02, $B_o$=-6.66, $L_o$=334.60)

SACRAMENTO PEAK Np CORONA 5303 Å

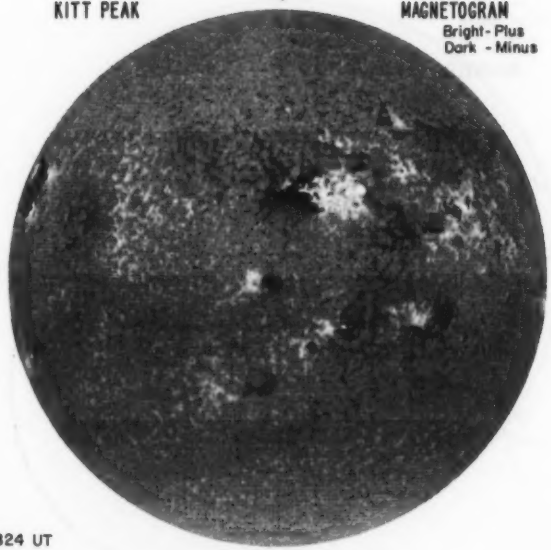



1.15 $R_\odot$ 1825 UT
1.35 $R_\odot$ 1801 UT
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

1824 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX=

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

11

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1824 UT

Sp

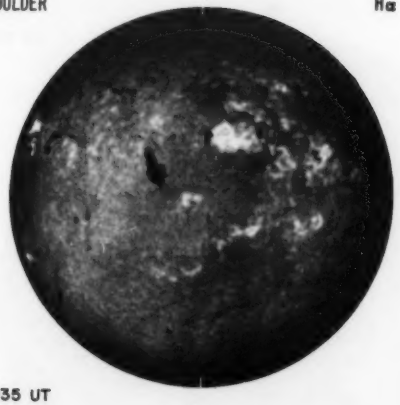
Sp

11

BOULDER

Np

Hα



E

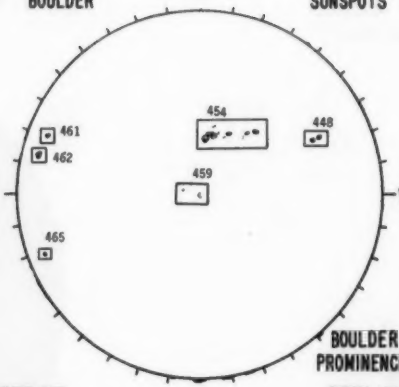
W

2035 UT

Sp

BOULDER

Np




E

W

2038 UT

Sp

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

2035 UT

Sp

Np

CALCIUM REPORT

NO DATA

E

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

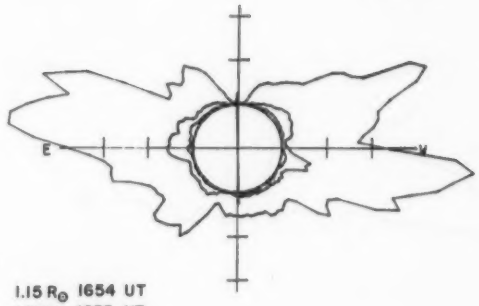
Sp

73

Feb 81

FEBRUARY 12, 1981 (P=-16.38, $B_o$=-6.71, $L_o$=321.43)

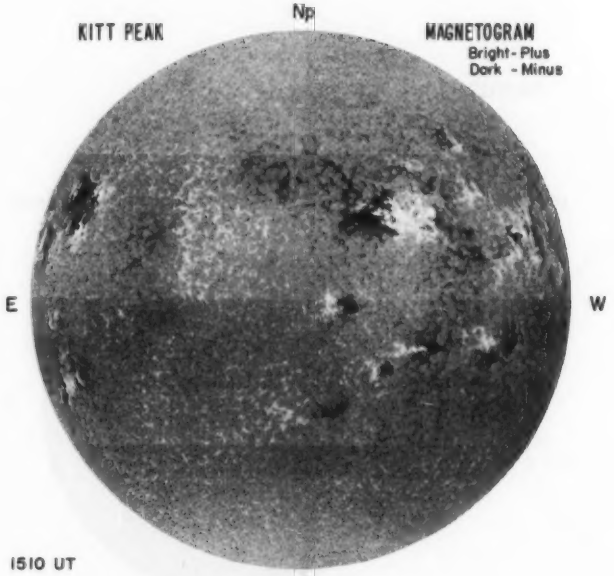
SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1654 UT
1.35 $R_\odot$ 1633 UT
1.55 $R_\odot$ 1643 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



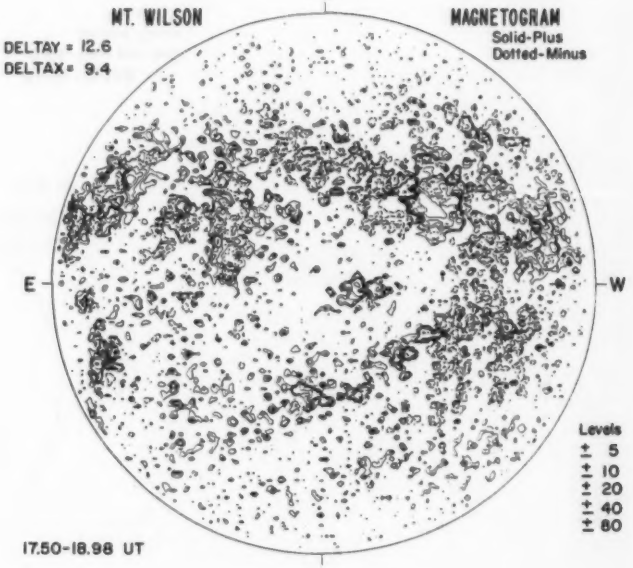

1510 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4




17.50-18.98 UT

Sp

12

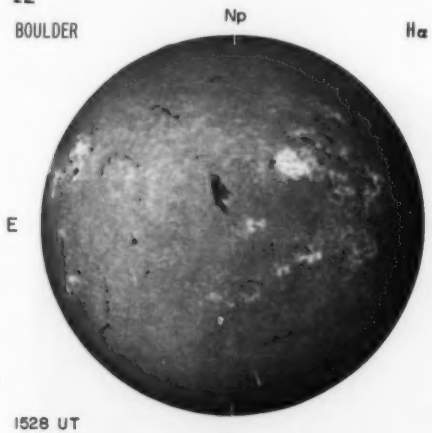
BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

12

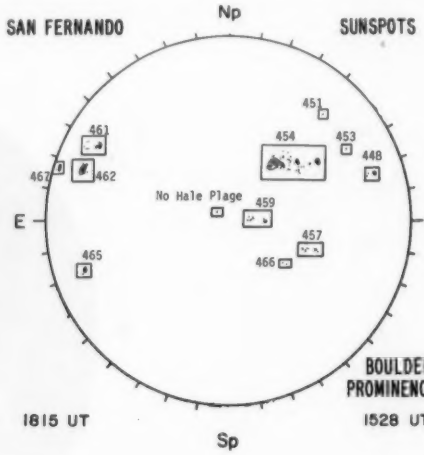
BOULDER




1528 UT

Hα

SAN FERNANDO



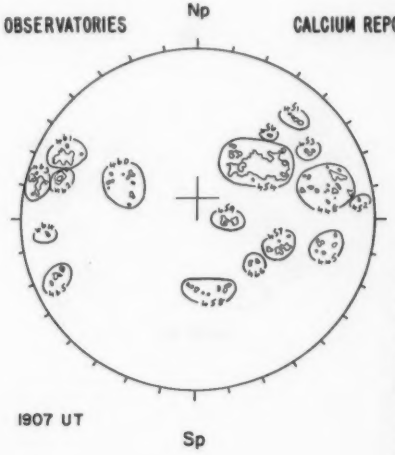

1815 UT

SUNSPOTS

BOULDER PROMINENCES

1528 UT

HALE OBSERVATORIES




1907 UT

CALCIUM REPORT

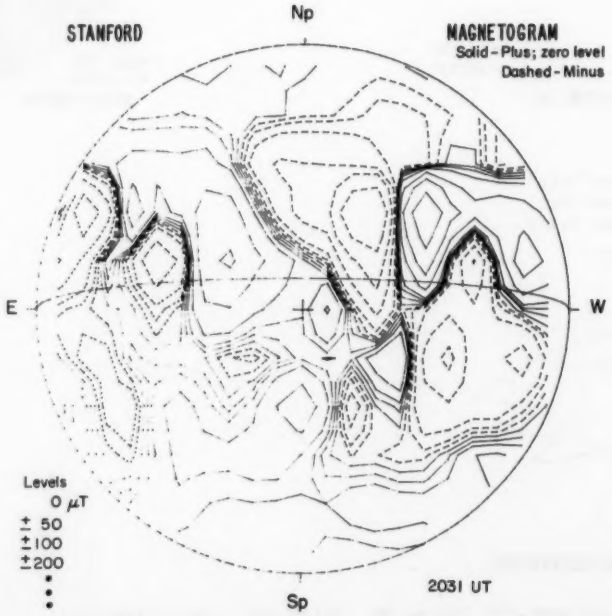
| | GOOD | JA |
|---|---|---|
| 45 | 0500 | 3.0 |
| 48 | 1900 | 3.0 |
| 51 | 0300 | 3.0 |
| 53 | 0300 | 3.0 |
| 54 | 5900 | 3.5 |
| 57 | 0900 | 3.5 |
| 58 | 0600 | 3.0 |
| 59 | 0500 | 3.0 |
| 60 | 0700 | 2.5 |
| 61 | 1700 | 3.5 |
| 62 | 0600 | 3.0 |
| 63 | 1200 | 3.0 |
| 65 | 0400 | 3.0 |
| 66 | 0200 | 3.0 |

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

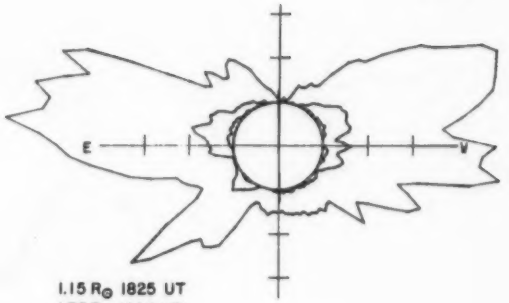



2031 UT

75
Feb 81

FEBRUARY 13, 1981 (P=-16.73, $B_o$=-6.75, $L_o$=308.26)

SACRAMENTO PEAK Np CORONA 5303 Å

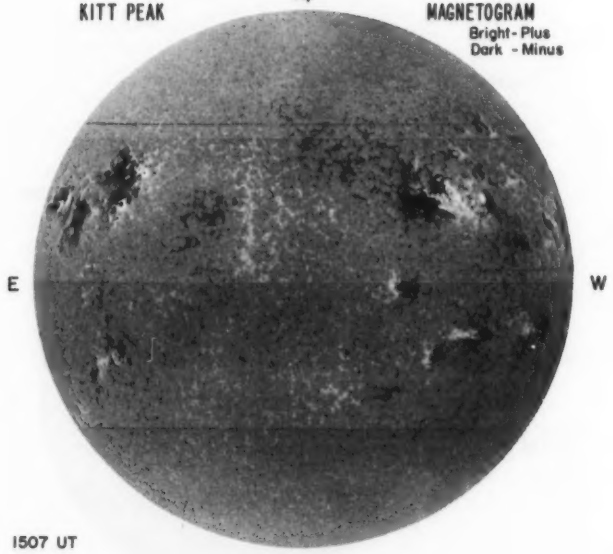



1.15 $R_\odot$ 1825 UT
1.35 $R_\odot$ 1804 UT
1.55 $R_\odot$ 1814 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1507 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

13

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1507 UT

Sp

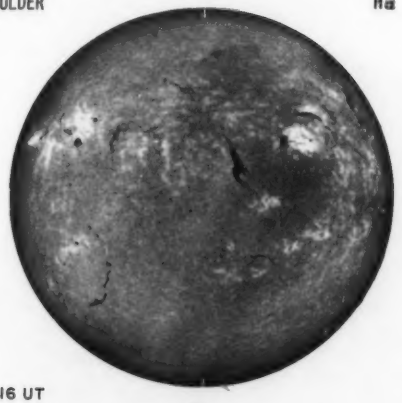
Sp

13

BOULDER

Np

Hα



E

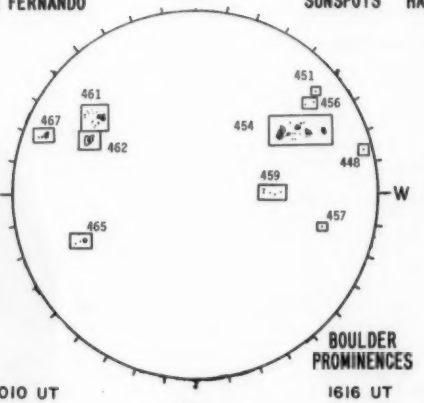
W

1616 UT

Sp

SAN FERNANDO

Np




E

W

2010 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

E

W

1616 UT

2209 UT

Sp

CALCIUM REPORT

| GOOD | JA |
|---|---|
| 45 0400 | 3.0 |
| 48 1500 | 3.0 |
| 51 0300 | 2.5 |
| 53 0300 | 3.0 |
| 54 5200 | 3.5 |
| 56 0300 | 3.0 |
| 57 0400 | 3.0 |
| 58 0300 | 3.0 |
| 59 0800 | 3.5 |
| 60 0900 | 2.5 |
| 61 3000 | 4.0 |
| 62 1100 | 4.0 |
| 63 1500 | 4.0 |
| 65 0800 | 3.0 |
| 66 0400 | 3.0 |
| 67 1400 | 4.0 |
| 68 0300 | 1.5 |
| 70 0200 | 2.5 |

BOULDER PROMINENCES

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

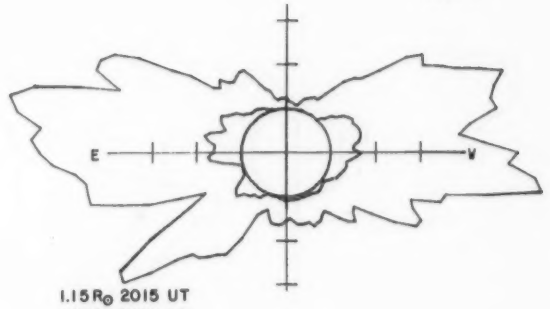
Sp

77

Feb 81

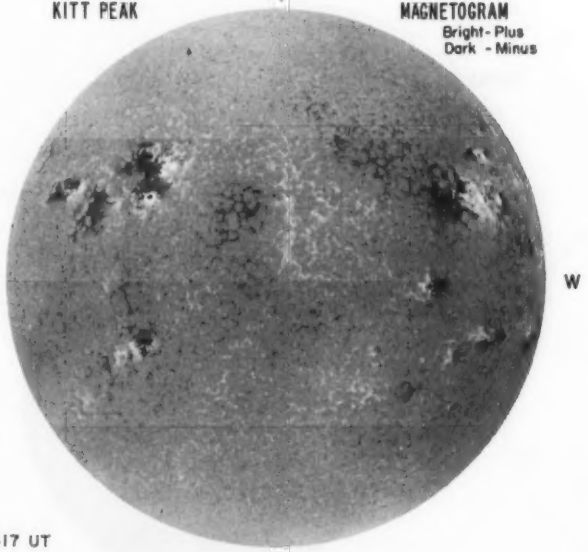
FEBRUARY 14, 1981 (P=-17.07, $B_o$=-6.80, $L_o$=295.09)

SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 2015 UT
1.35 $R_\odot$ 2024 UT
1.55 $R_\odot$

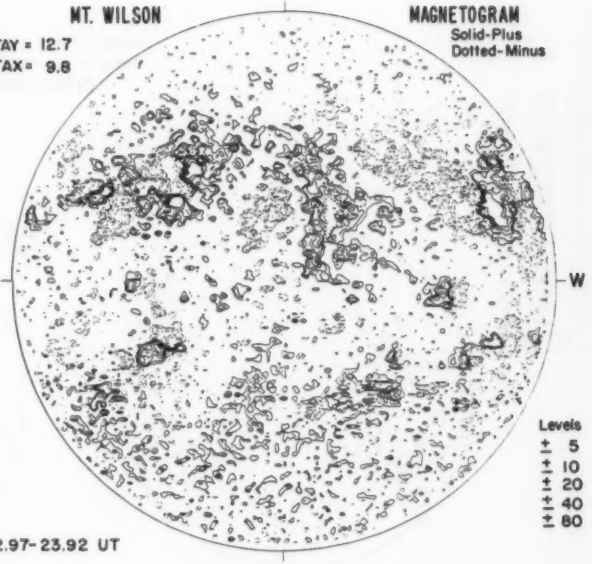
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus




1517 UT

Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.7
DELTAX = 9.8




22.97-23.92 UT

14

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1517 UT

Sp

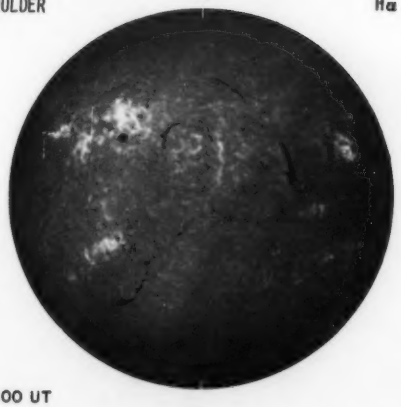
22.97-23.92 UT

Sp



BOULDER

Np



E W

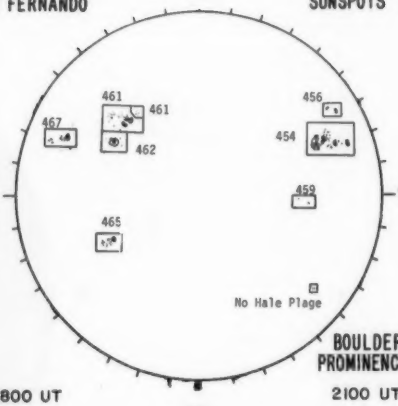
2100 UT

Sp

Hα

SAN FERNANDO

Np




E W

1800 UT

Sp

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

2100 UT

Np

E W

2038 UT

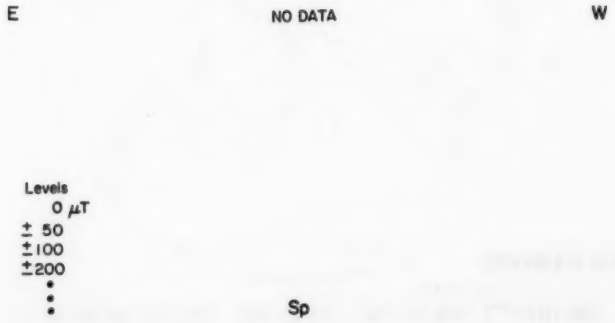
Sp

CALCIUM REPORT

| | GOOD | JA |
|---|---|---|
| 45 | 0300 | 2.5 |
| 48 | 0400 | 2.5 |
| 51 | 0100 | 2.5 |
| 53 | 0200 | 3.0 |
| 54 | 5700 | 3.5 |
| 56 | 0300 | 3.0 |
| 57 | 0400 | 3.0 |
| 58 | 0300 | 2.5 |
| 59 | 0400 | 3.0 |
| 60 | 0600 | 3.0 |
| 61 | 3800 | 4.0 |
| 62 | 1000 | 3.5 |
| 63 | 1300 | 4.0 |
| 65 | 1100 | 3.5 |
| 66 | 0300 | 3.0 |
| 67 | 1800 | 4.0 |
| 68 | 0300 | 2.5 |
| 70 | 0300 | 3.0 |

STANFORD

Np




MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

79
Feb 81

FEBRUARY 15, 1981 (P=-17.41, $B_o$=-6.84, $L_o$=281.92)

SACRAMENTO PEAK Np CORONA 5303 Å

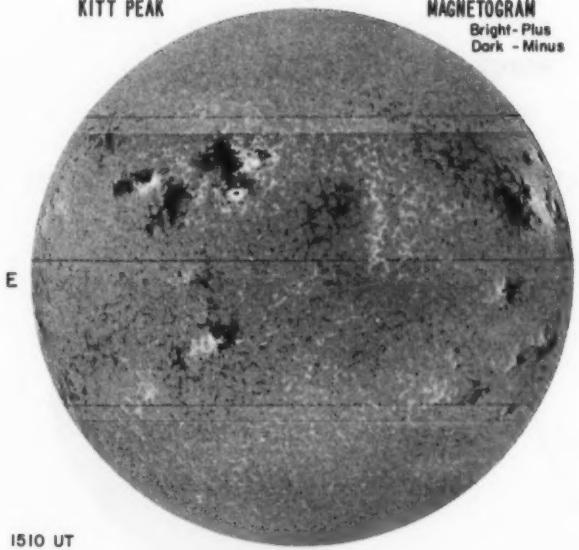
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

1510 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

15

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1510 UT

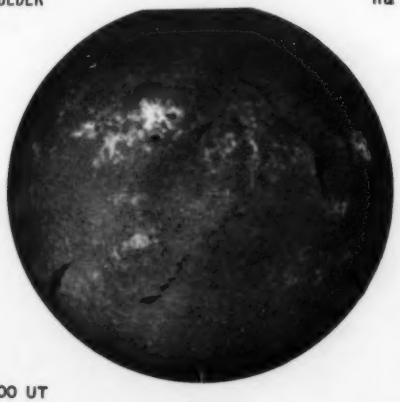
Sp

Sp

15

BOULDER

Np



E

W

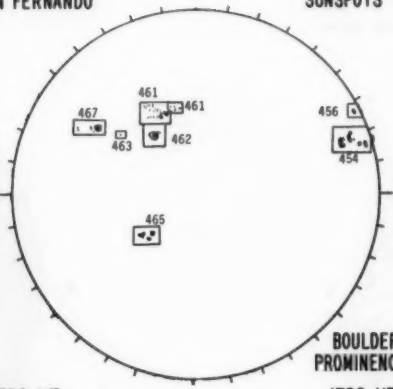
1700 UT

Sp

Hα

SAN FERNANDO

Np




E

W

1750 UT

Sp

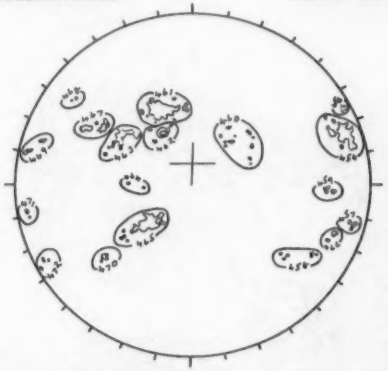
SUNSPOTS

BOULDER PROMINENCES

1700 UT

HALE OBSERVATORIES

Np



E

W

2221 UT

Sp

CALCIUM REPORT

| | FAIR | JA |
|---|---|---|
| 54 | 3000 | 3.5 |
| 56 | 0400 | 3.0 |
| 57 | 0300 | 2.5 |
| 59 | 0300 | 3.0 |
| 60 | 0600 | 2.5 |
| 61 | 2500 | 3.5 |
| 62 | 0600 | 3.0 |
| 63 | 1100 | 3.5 |
| 64 | 0200 | 2.0 |
| 65 | 1700 | 3.5 |
| 66 | 0300 | 2.5 |
| 67 | 1000 | 3.5 |
| 70 | 0200 | 3.0 |

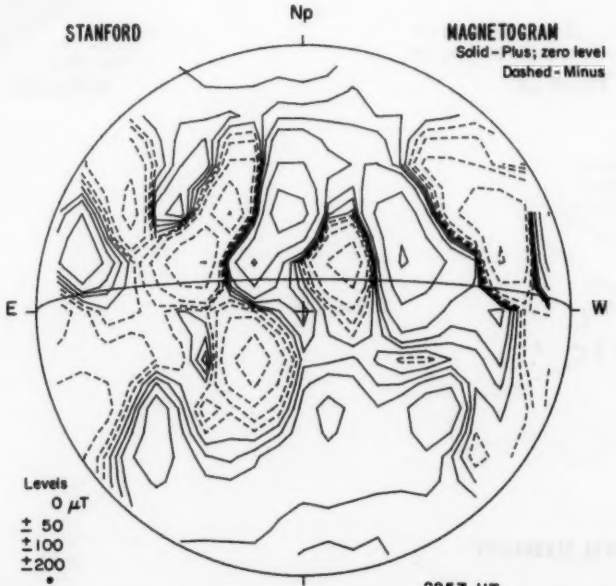
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

2257 UT

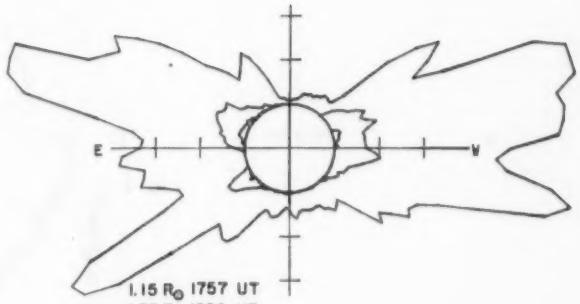
Sp

81

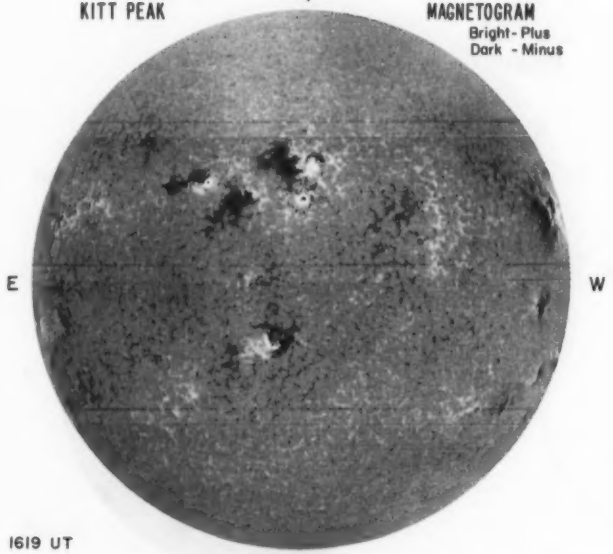
Feb 81

FEBRUARY 16, 1981 (P=-17.75, $B_o$=-6.88, $L_o$=268.76)

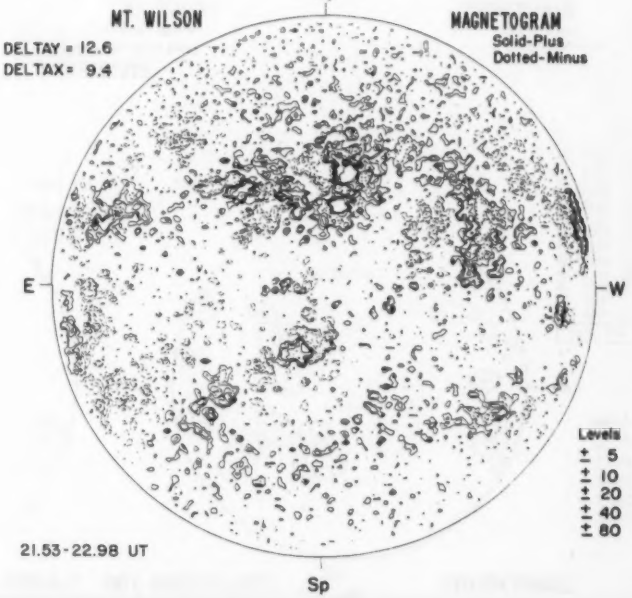
SACRAMENTO PEAK Np CORONA
5303 Å




KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus




Np
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX = 9.4




16

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1619 UT

Sp

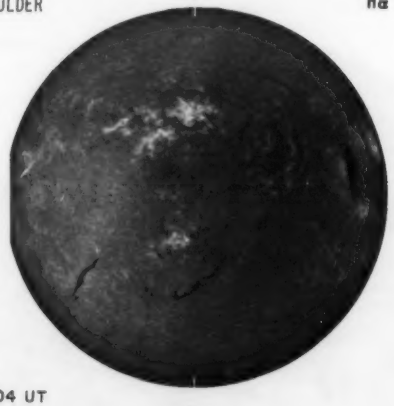
21.53-22.98 UT

Sp



BOULDER

Np



E W

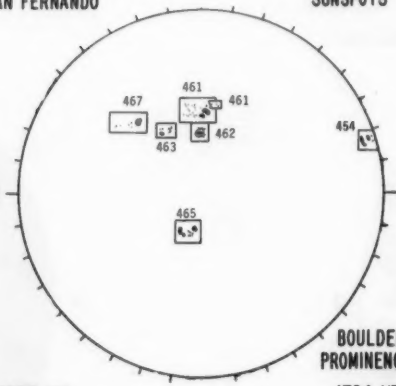
1704 UT

Sp

Hα

SAN FERNANDO

Np




E W

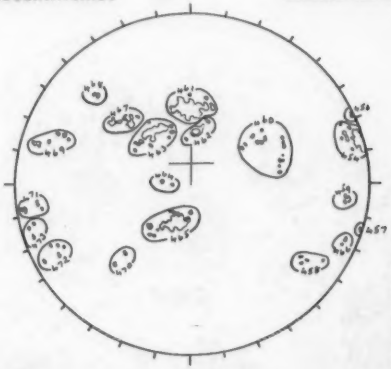
1800 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np



E W

1704 UT

1857 UT

Sp

CALCIUM REPORT

| | GOOD | JA |
|---|---|---|
| 54 | 2000 | 3.5 |
| 56 | 0200 | 3.0 |
| 57 | 0200 | 3.0 |
| 58 | 0300 | 2.5 |
| 59 | 0300 | 3.0 |
| 60 | 0700 | 2.5 |
| 61 | 2700 | 3.5 |
| 62 | 0500 | 3.0 |
| 63 | 1400 | 3.5 |
| 65 | 1800 | 3.5 |
| 66 | 0200 | 3.0 |
| 67 | 0900 | 3.5 |
| 68 | 0200 | 2.5 |
| 69 | 0600 | 2.5 |
| 70 | 0200 | 2.5 |
| 71 | 0400 | 2.5 |
| 72 | 0500 | 2.5 |
| 73 | 0300 | 2.5 |

BOULDER PROMINENCES

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

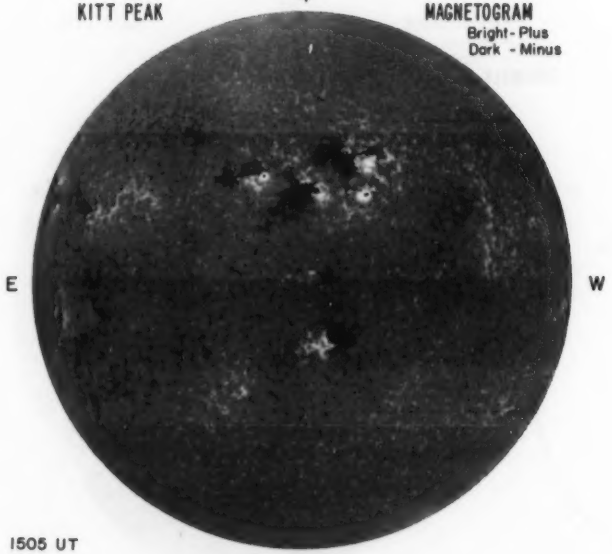
FEBRUARY 17, 1981 (P=-18.08, $B_o$=-6.92, $L_o$=255.59)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

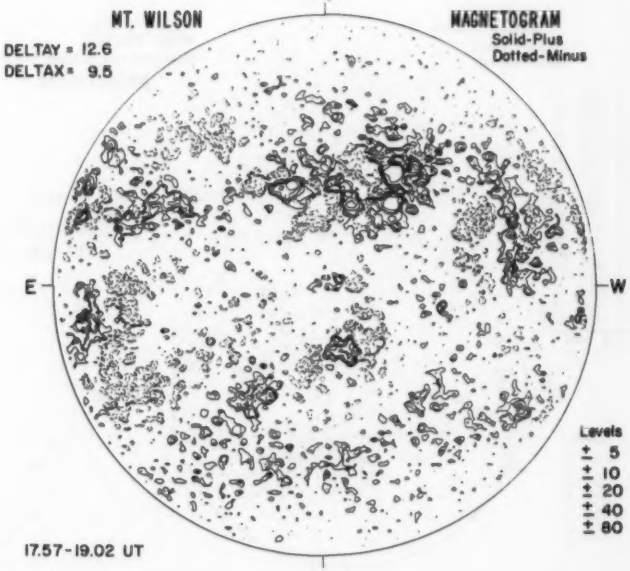
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus




1505 UT

MT. WILSON Sp Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5




17.57-19.02 UT

17

BOULDER Np $H_\alpha$ SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1505 UT

Sp

17:37-19:02 UT

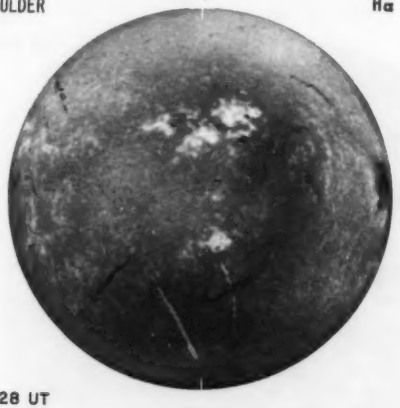
Sp

17

BOULDER

Np

Hα



E

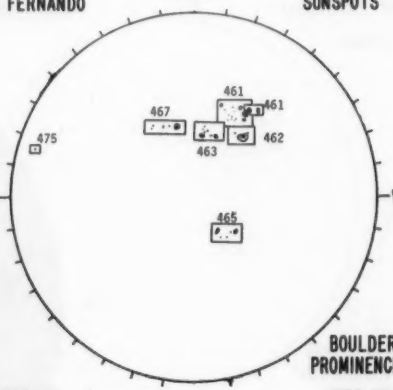
W

1528 UT

Sp

SAN FERNANDO

Np




E

W

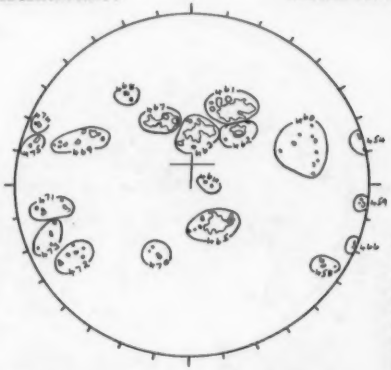
2030 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np



E

W

1905 UT

Sp

CALCIUM REPORT

| | GOOD | JA |
|---|---|---|
| 54 | 0300 | 2.5 |
| 59 | 0300 | 2.5 |
| 60 | 0500 | 3.0 |
| 61 | 3000 | 3.5 |
| 62 | 0700 | 3.0 |
| 63 | 1800 | 4.0 |
| 65 | 1800 | 3.5 |
| 67 | 1500 | 3.0 |
| 68 | 0200 | 2.5 |
| 69 | 0800 | 3.0 |
| 70 | 0200 | 2.5 |
| 71 | 0400 | 2.5 |
| 72 | 0400 | 2.5 |
| 73 | 0300 | 2.5 |
| 74 | 0200 | 3.0 |
| 75 | 0300 | 2.5 |

BOULDER PROMINENCES

1525 UT

STANFORD

Np

NO DATA

E

W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

•

•

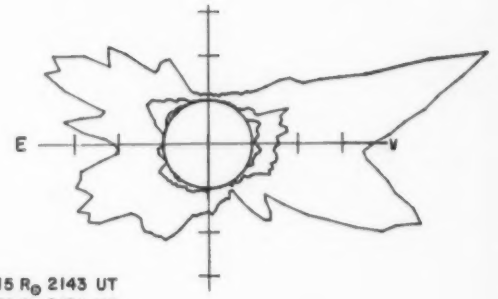
Sp

85

Feb 81

FEBRUARY 18, 1981 (P=-18.40, $B_o$=-6.96, $L_o$=242.42)

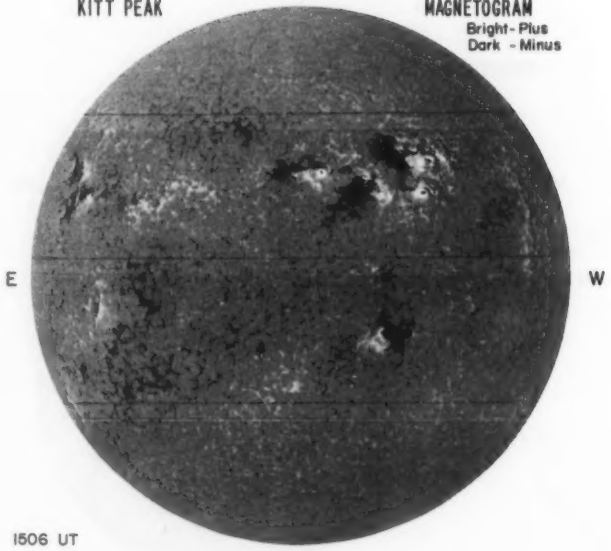
SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 2143 UT
1.35 $R_\odot$ 2134 UT
1.55 $R_\odot$ 2151 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



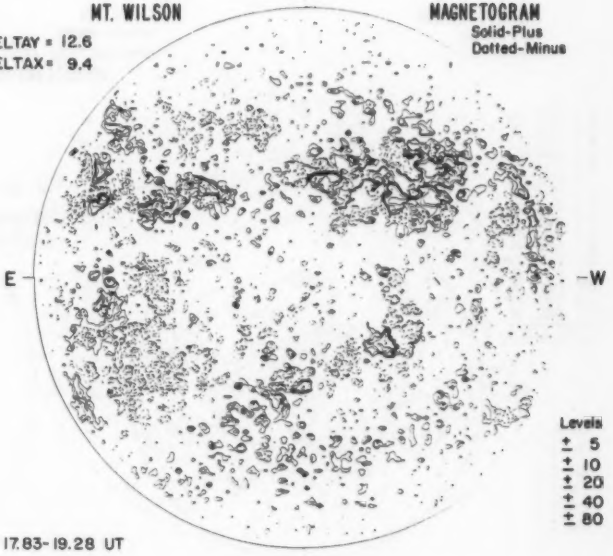

1506 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4




17.83-19.28 UT

Sp



Np

BOULDER

Np

SAN FERNANDO

Np

SUNSPOTS HALE OBSERVATORIES

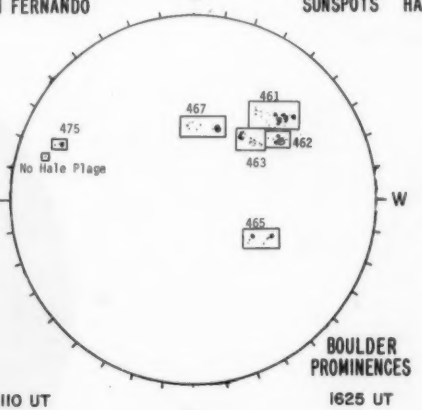
Np

CALCIUM REPORT

BOULDER Hα

1625 UT

SAN FERNANDO SUNSPOTS HALE OBSERVATORIES

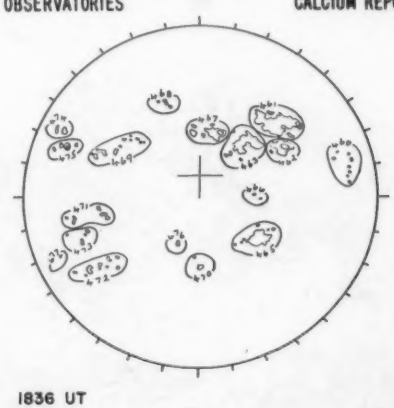



2110 UT

BOULDER PROMINENCES

1625 UT

CALCIUM REPORT

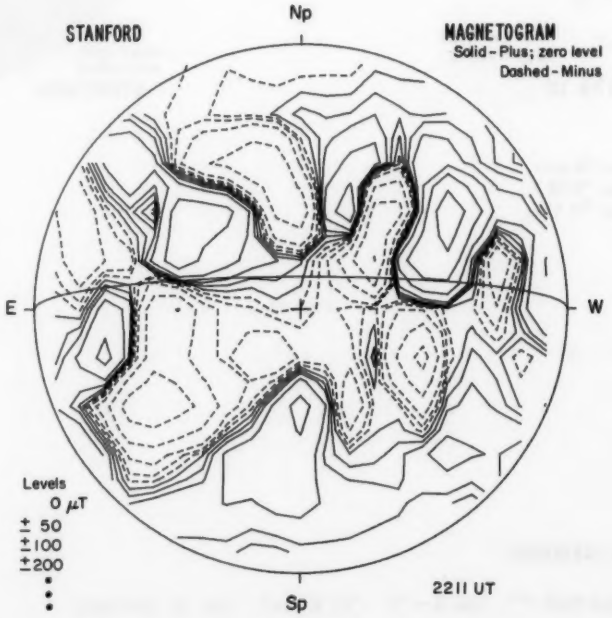



1836 UT

| | GOOD | JA |
|---|---|---|
| 60 | 0400 | 2.5 |
| 61 | 3700 | 3.5 |
| 62 | 0900 | 3.0 |
| 63 | 1800 | 3.5 |
| 65 | 1500 | 3.0 |
| 67 | 1000 | 3.0 |
| 68 | 0200 | 2.5 |
| 69 | 0800 | 3.0 |
| 70 | 0200 | 3.0 |
| 71 | 0500 | 3.0 |
| 72 | 0800 | 3.0 |
| 73 | 0300 | 3.0 |
| 74 | 0400 | 3.0 |
| 75 | 0400 | 3.0 |

STANFORD MAGNETOGRAM

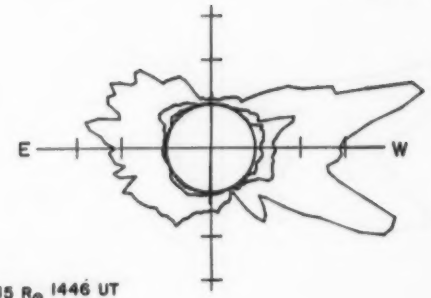
Solid - Plus; zero level
Dashed - Minus




2211 UT

FEBRUARY 19, 1981 (P=-18.71, $B_o$=-6.99, $L_o$=229.25)

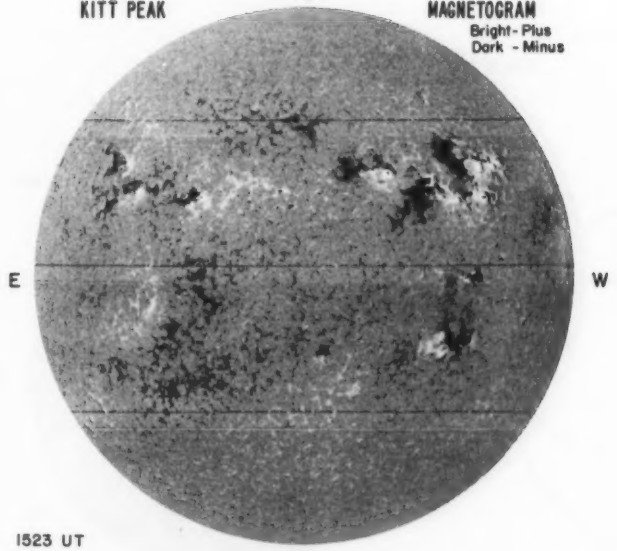
SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1446 UT
1.35 $R_\odot$ 1454 UT
1.55 $R_\odot$ 1503 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

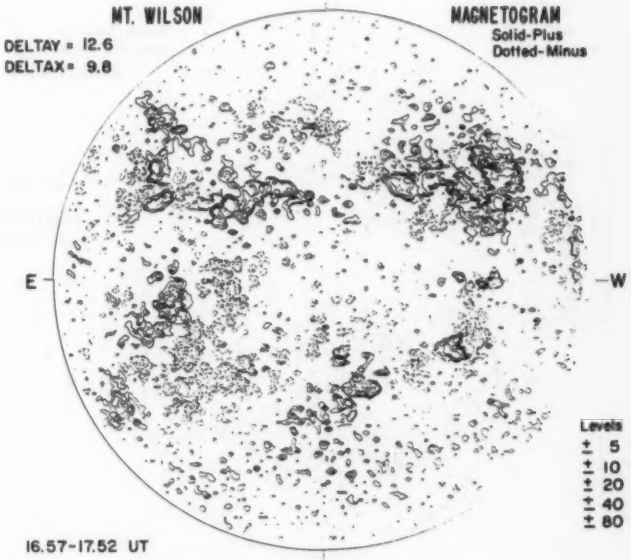



1523 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.8




16.57-17.52 UT

Sp

19

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

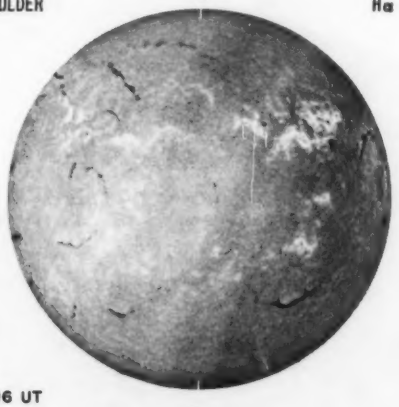
Sp

19

BOULDER

Np

Hα



E

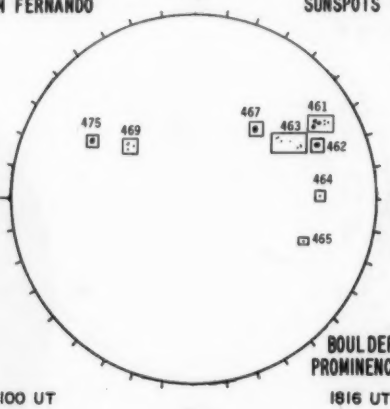
W

1816 UT

Sp

SAN FERNANDO

Np




E

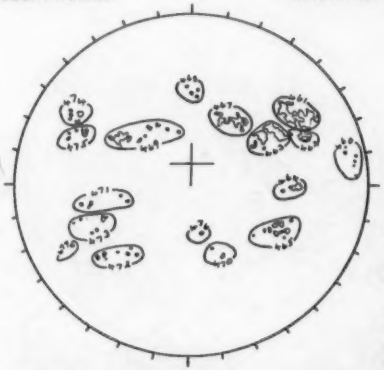
W

2100 UT

Sp

SUNSPOTS HALE OBSERVATORIES

Np



E

W

1553 UT

Sp

BOULDER PROMINENCES

1816 UT

CALCIUM REPORT

| FAIR | | JA |
|---|---|---|
| 61 | 2700 | 3.5 |
| 62 | 0600 | 3.0 |
| 63 | 1600 | 3.5 |
| 64 | 0400 | 3.0 |
| 65 | 0800 | 3.0 |
| 67 | 1100 | 3.0 |
| 68 | 0200 | 2.5 |
| 69 | 0900 | 3.0 |
| 70 | 0200 | 2.5 |
| 71 | 0300 | 2.5 |
| 72 | 0400 | 2.5 |
| 73 | 0300 | 2.5 |
| 74 | 0400 | 3.0 |
| 75 | 0400 | 2.5 |
| 76 | 0100 | 2.5 |

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

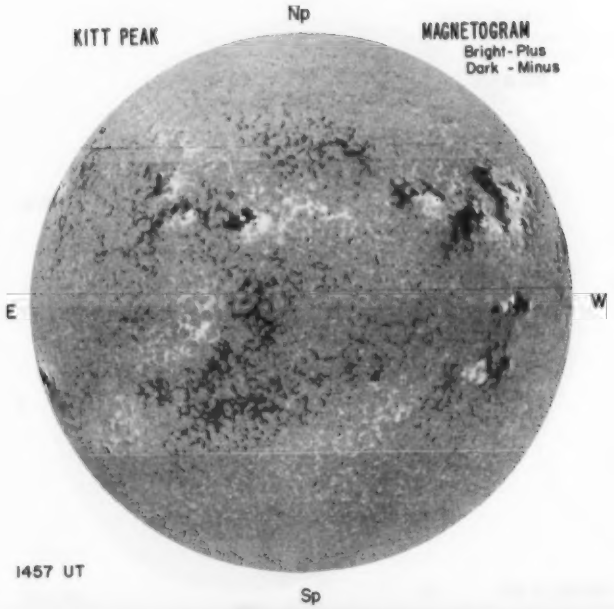
FEBRUARY 20, 1981 (P=-19.02, $B_o$=-7.03, $L_o$=216.08)

SACRAMENTO PEAK Np CORONA 5303 Å

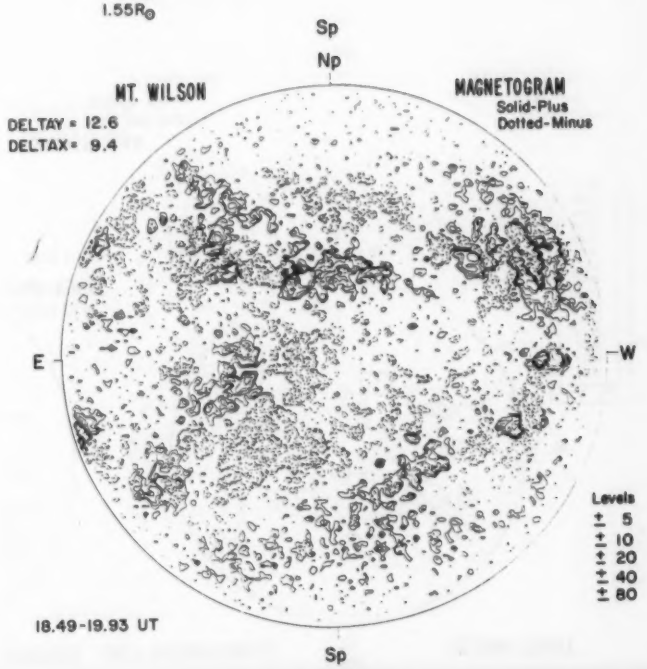
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK




MT. WILSON




20

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1457 UT

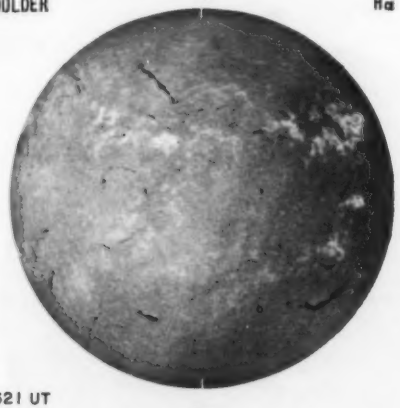
Sp

18.49-19.93 UT

Sp

20

BOULDER

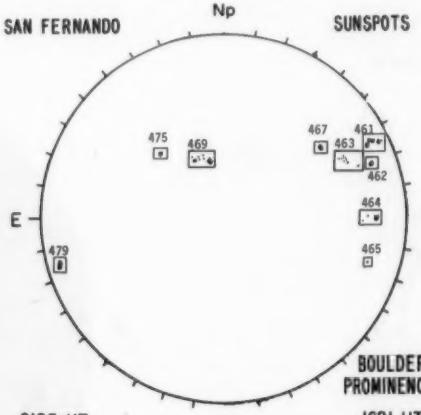



1621 UT

Sp

Hα

SAN FERNANDO




2125 UT

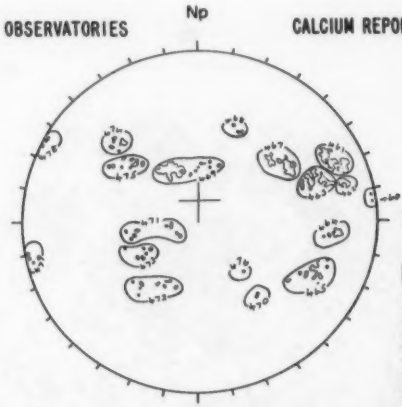
Sp

SUNSPOTS

BOULDER PROMINENCES

1621 UT

HALE OBSERVATORIES




1542 UT

Sp

CALCIUM REPORT

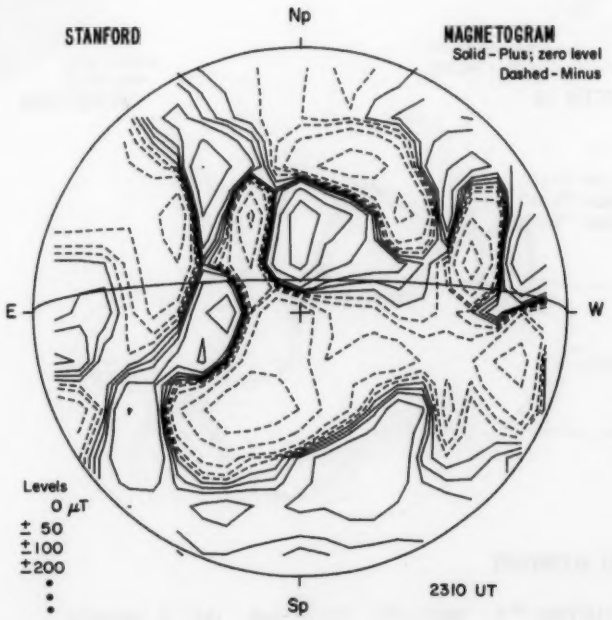
| G000 | | JA |
|---|---|---|
| 61 | 2200 | 3.5 |
| 62 | 0500 | 3.0 |
| 63 | 1700 | 3.5 |
| 64 | 0600 | 3.5 |
| 65 | 1000 | 3.0 |
| 67 | 1300 | 3.0 |
| 68 | 0200 | 2.5 |
| 69 | 1500 | 3.5 |
| 70 | 0100 | 2.5 |
| 71 | 0500 | 3.0 |
| 72 | 0400 | 3.0 |
| 73 | 0300 | 3.0 |
| 74 | 0400 | 3.5 |
| 75 | 0500 | 3.0 |
| 76 | 0100 | 3.0 |
| 78 | 0200 | 3.0 |
| 79 | 0300 | 3.0 |

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

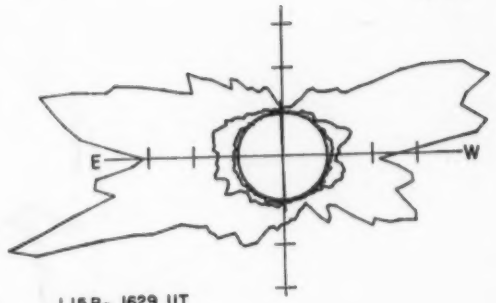



2310 UT

Sp

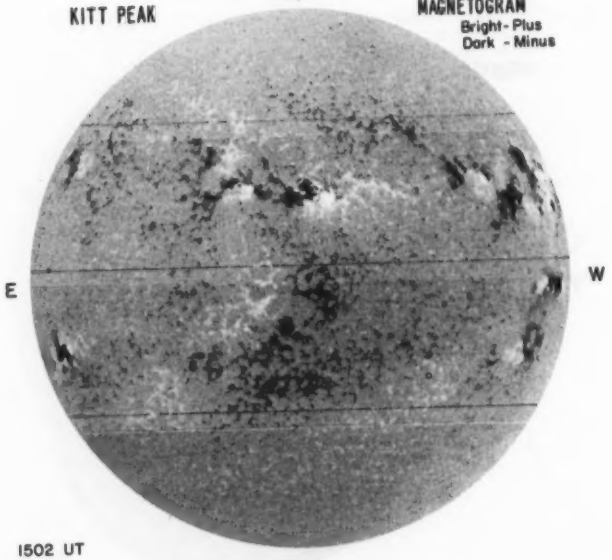
FEBRUARY 21, 1981 (P=-19.33, $B_o$=-7.06, $L_o$= 202.91)

SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1629 UT
1.35 $R_\odot$ 1608 UT
1.55 $R_\odot$ 1617 UT

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



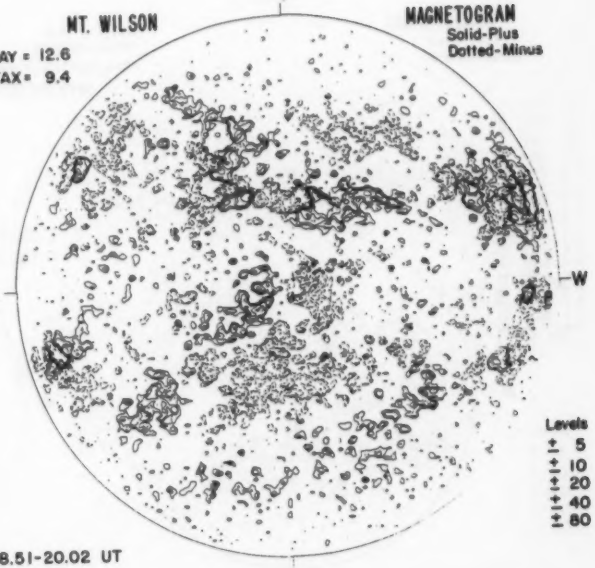

1502 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4




18.51-20.02 UT

Sp

21

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1502 UT

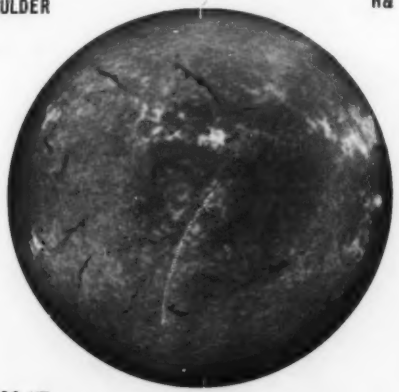
Sp

Sp

21

BOULDER

Np



E

W

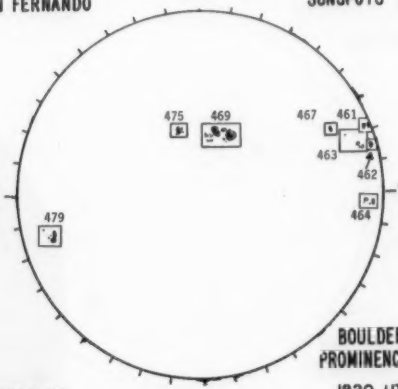
1820 UT

Sp

Hα

SAN FERNANDO

Np




E

W

2200 UT

Sp

SUNSPOTS HALE OBSERVATORIES

Np

E

W

BOULDER PROMINENCES

1820 UT

1911 UT

Sp

CALCIUM REPORT

| GOOD | JA |
|---|---|
| 61 2200 | 3.5 |
| 62 0500 | 3.0 |
| 63 1500 | 4.0 |
| 64 0600 | 3.5 |
| 65 0900 | 3.5 |
| 67 1100 | 3.0 |
| 69 1800 | 3.0 |
| 71 0400 | 3.0 |
| 72 0400 | 3.0 |
| 73 0300 | 3.0 |
| 74 0600 | 3.0 |
| 75 0700 | 3.0 |
| 76 0100 | 2.5 |
| 78 0500 | 3.0 |
| 79 0600 | 3.5 |
| 80 0100 | 3.0 |

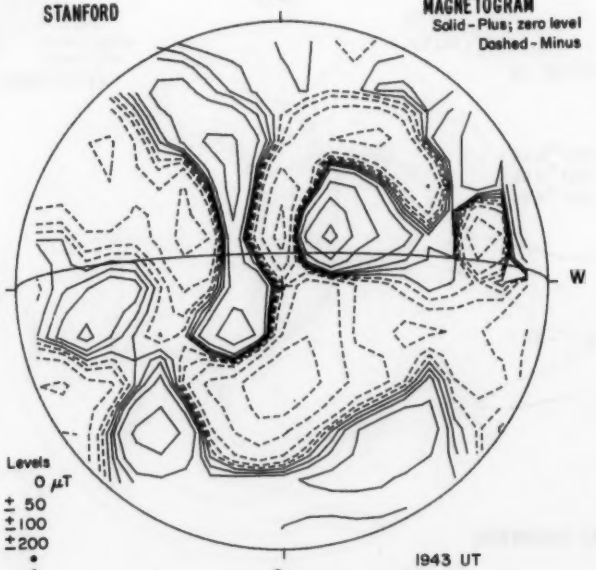
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

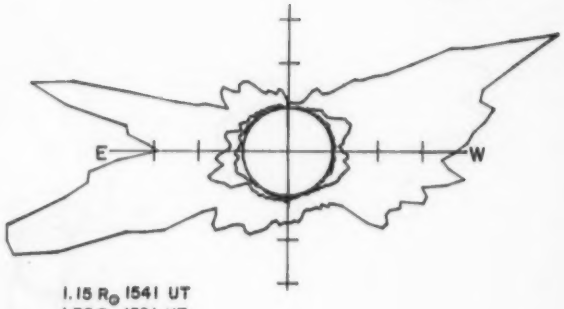
±200

1943 UT

Sp

FEBRUARY 22, 1981 (P=-19.63, $B_o$=-7.09, $L_o$=189.74)

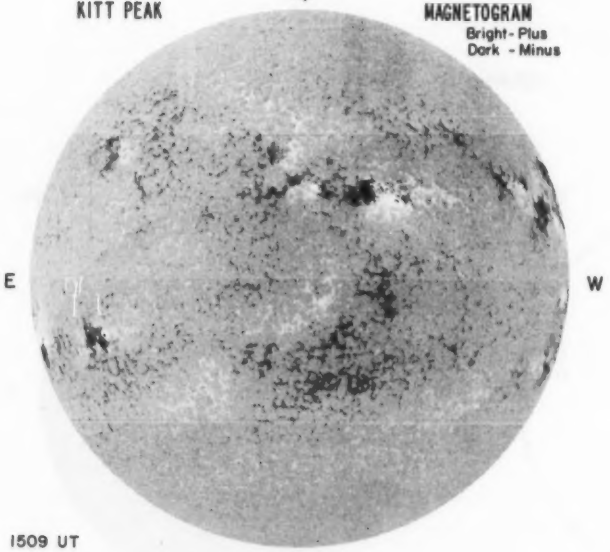
SACRAMENTO PEAK Np CORONA 5303 Å




1.15 $R_\odot$ 1541 UT
1.35 $R_\odot$ 1521 UT
1.55 $R_\odot$ 1530 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



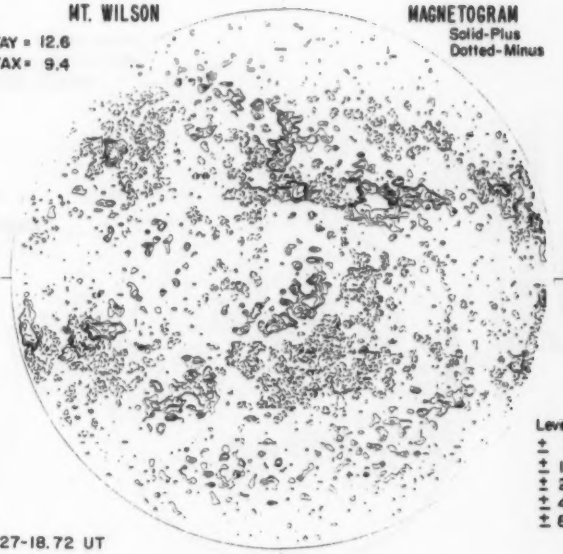

1509 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4




17.27-18.72 UT

Sp

22

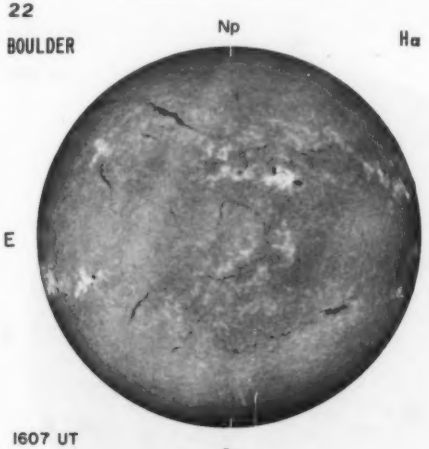
BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

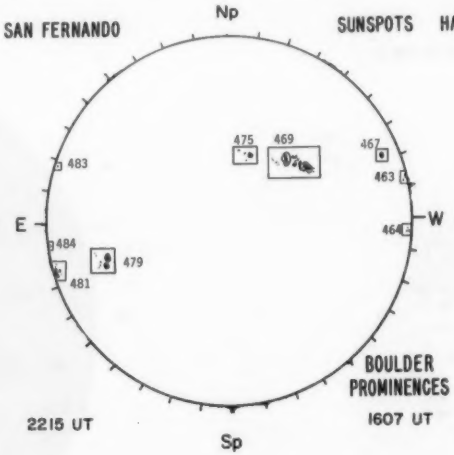


BOULDER




1607 UT

Hα SAN FERNANDO

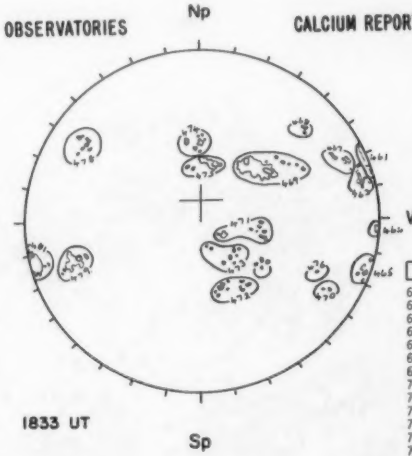



2215 UT

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

1607 UT



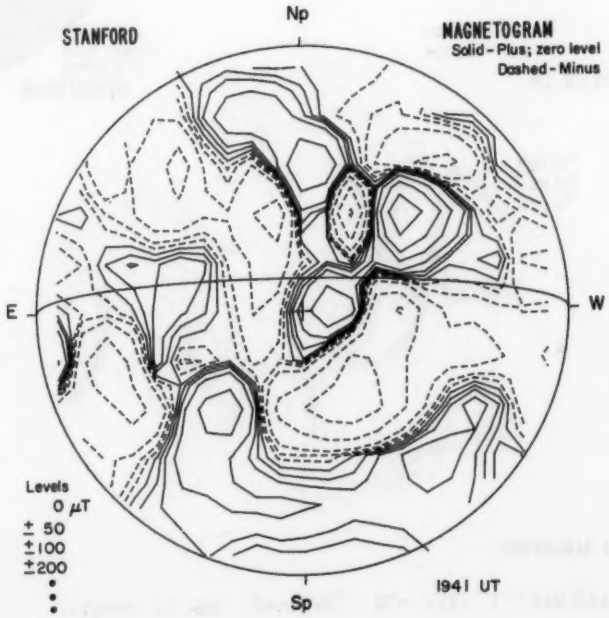

1833 UT

CALCIUM REPORT

| | GOOD | JA |
|---|---|---|
| 61 | 1800 | 3.5 |
| 63 | 1200 | 3.5 |
| 64 | 0400 | 3.5 |
| 65 | 0700 | 3.0 |
| 67 | 0700 | 3.0 |
| 68 | 0200 | 2.5 |
| 69 | 2700 | 3.5 |
| 71 | 0500 | 3.0 |
| 72 | 0500 | 2.5 |
| 73 | 0400 | 2.5 |
| 74 | 0400 | 3.0 |
| 75 | 0600 | 3.0 |
| 78 | 0500 | 3.0 |
| 79 | 1200 | 3.5 |
| 81 | 2200 | 3.5 |

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus




1941 UT

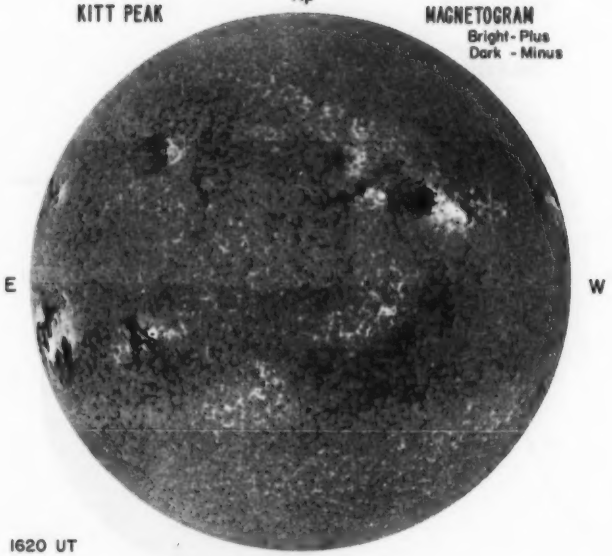
FEBRUARY 23, 1981 (P=-19.92, $B_o$=-7.11, $L_o$=176.57)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

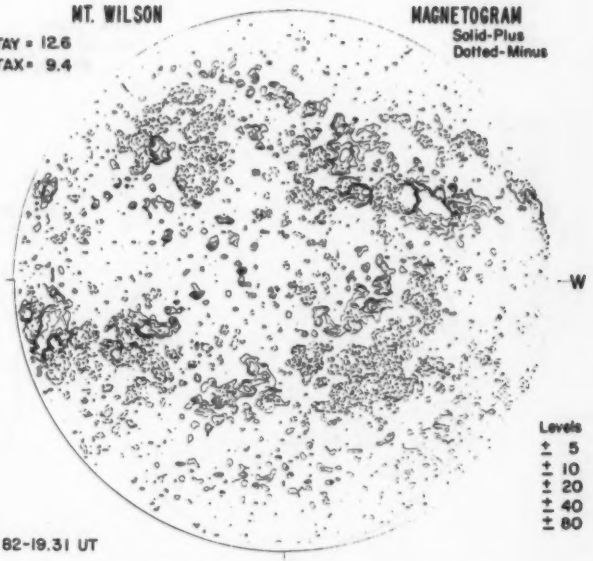
1620 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± 10
± 20
± 40
± 80

17.82-19.31 UT

Sp

23

BOULDER Np

Hα SAN FERNANDO Np

SUNSPOTS HALE OBSERVATORIES Np

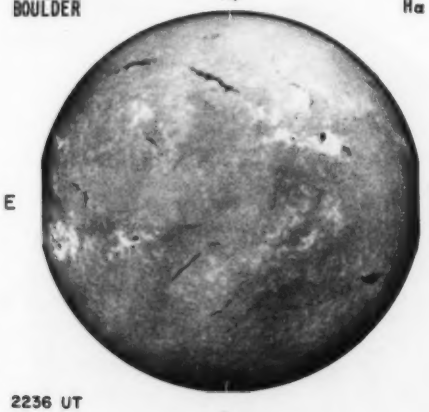
CALCIUM REPORT

Sp

Sp

23

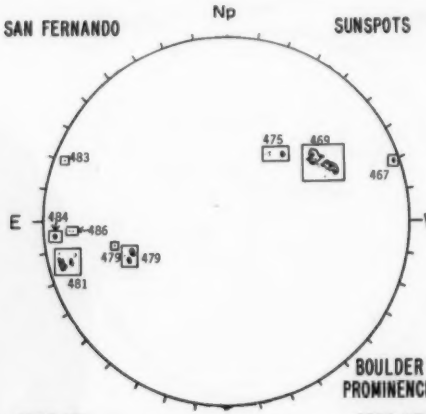
BOULDER




2236 UT

Hα

SAN FERNANDO



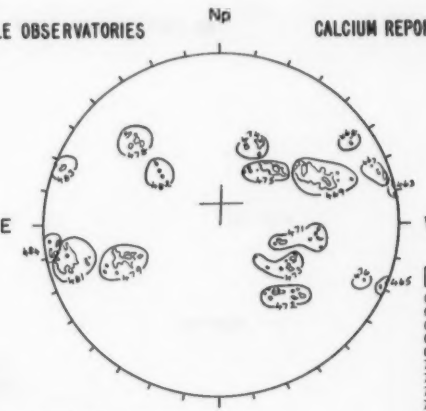

1930 UT

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

2236 UT

CALCIUM REPORT




1908 UT

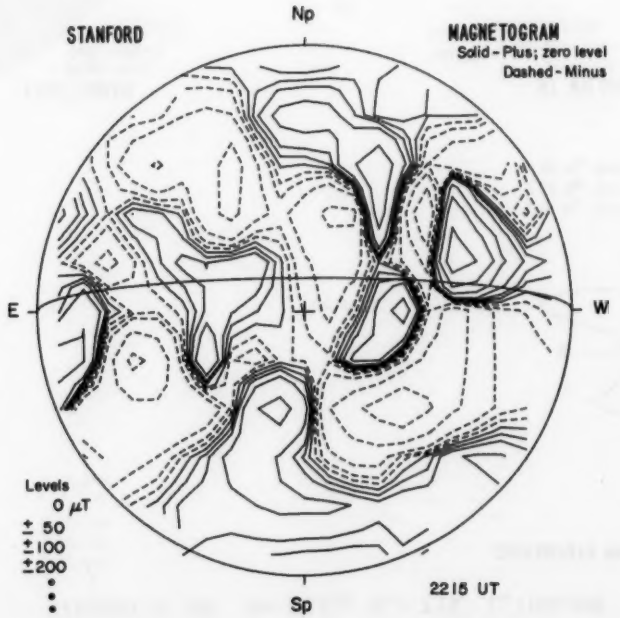
| GOOD | | JA |
|---|---|---|
| 63 | 0400 | 3.0 |
| 65 | 0300 | 2.5 |
| 67 | 0500 | 3.0 |
| 68 | 0100 | 2.5 |
| 69 | 3100 | 3.5 |
| 71 | 0500 | 3.0 |
| 72 | 0600 | 3.0 |
| 73 | 0500 | 3.0 |
| 74 | 0500 | 3.0 |
| 75 | 0900 | 3.5 |
| 76 | 0100 | 2.5 |
| 78 | 0500 | 3.5 |
| 79 | 1100 | 3.5 |
| 81 | 3100 | 3.5 |
| 82 | 0200 | 3.0 |
| 83 | 0300 | 3.0 |
| 84 | 0400 | 3.0 |

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



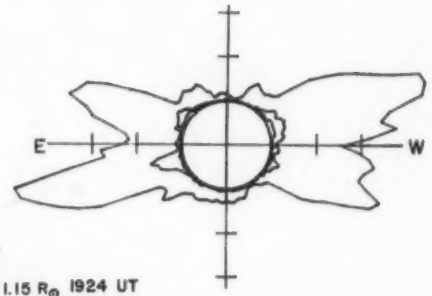

2215 UT

97

Feb 81

FEBRUARY 24, 1981 (P=-20.21, $B_o$=-7.13, $L_o$=163.40)

SACRAMENTO PEAK Np CORONA 5303 Å

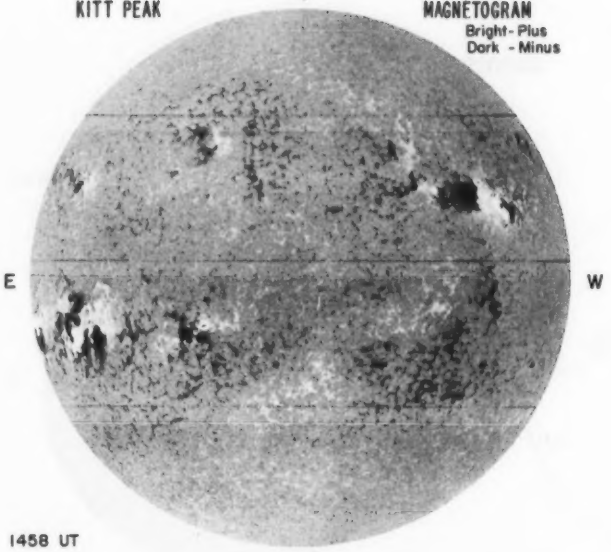



1.15 $R_\odot$ 1924 UT
1.35 $R_\odot$ 1932 UT
1.55 $R_\odot$ 1943 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus




1458 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

Sp

24

BOULDER Np Hα

BOULDER Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

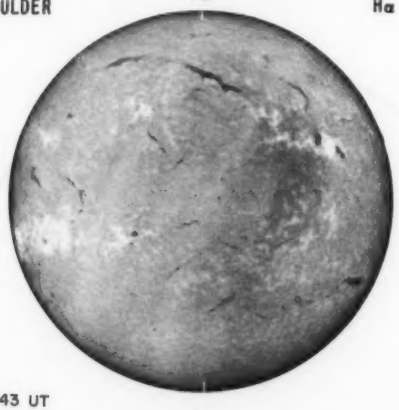
Sp

24

BOULDER

Np

Hα



E

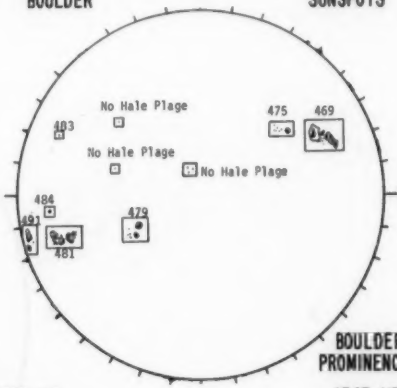
W

1543 UT

Sp

BOULDER

Np




E

W

1525 UT

Sp

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

E

W

1543 UT

Sp

Np

CALCIUM REPORT

NO DATA

E

W

Sp

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

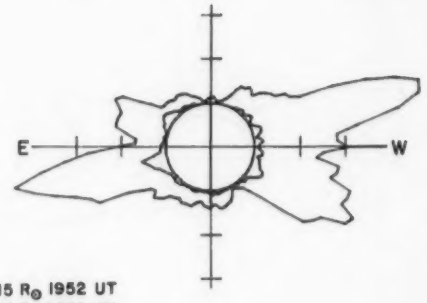
Sp

99

Feb 81

FEBRUARY 25, 1981 (P=-20.49, $B_o$=-7.16, $L_o$=150.23)

SACRAMENTO PEAK Np CORONA 5303 Å

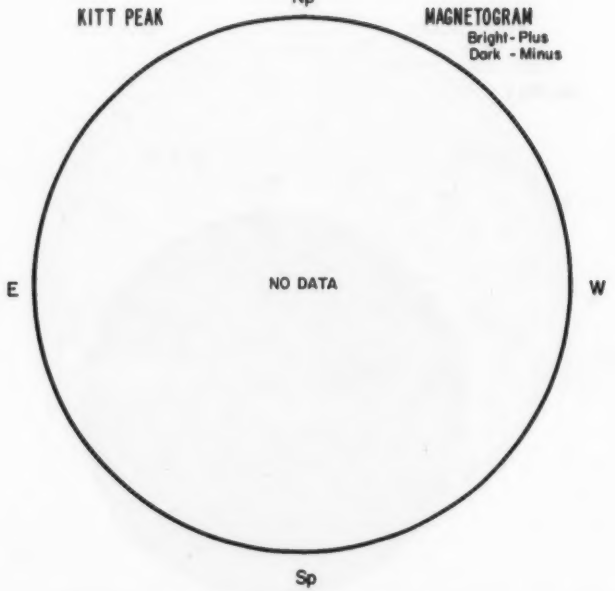



1.15 $R_\odot$ 1952 UT
1.35 $R_\odot$ 2001 UT
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus




MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

Levels
+ 5
++ 10
+++ 20
++++ 40
+++++ 80

25

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

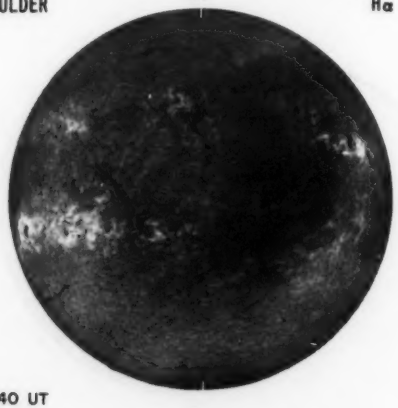
Sp

25

BOULDER

Np

Hα



E

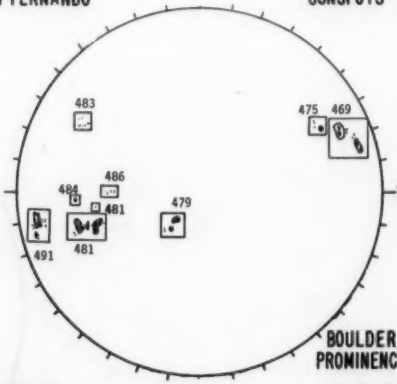
W

1540 UT

Sp

SAN FERNANDO

Np




E

W

1750 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

E

W

1540 UT

Sp

CALCIUM REPORT

Np

NO DATA

E

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

101

Feb 81

FEBRUARY 26, 1981 (P=-20.76, $B_o$=-7.18, $L_o$=137.05)

SACRAMENTO PEAK Np CORONA 5303 Å

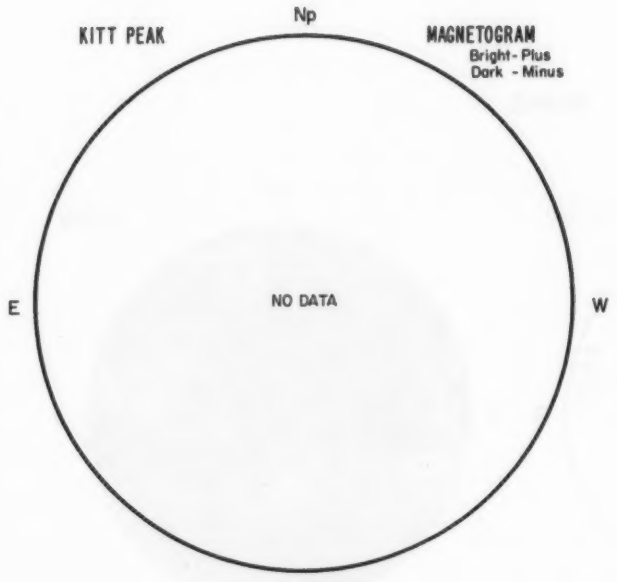
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus




MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

26

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

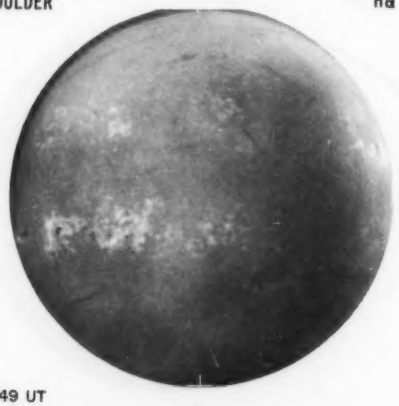
Sp

Sp

26

BOULDER

Np



E W

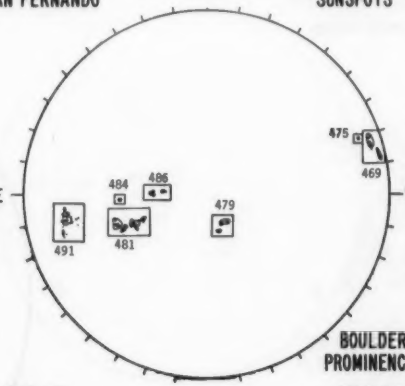
1749 UT

Sp

Hα

SAN FERNANDO

Np




E W

1845 UT

Sp

SUNSPOTS HALE OBSERVATORIES

Np



BOULDER PROMINENCES

E W

1749 UT

Sp

CALCIUM REPORT

Np

NO DATA

E W

Sp

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

••

103
Feb 81

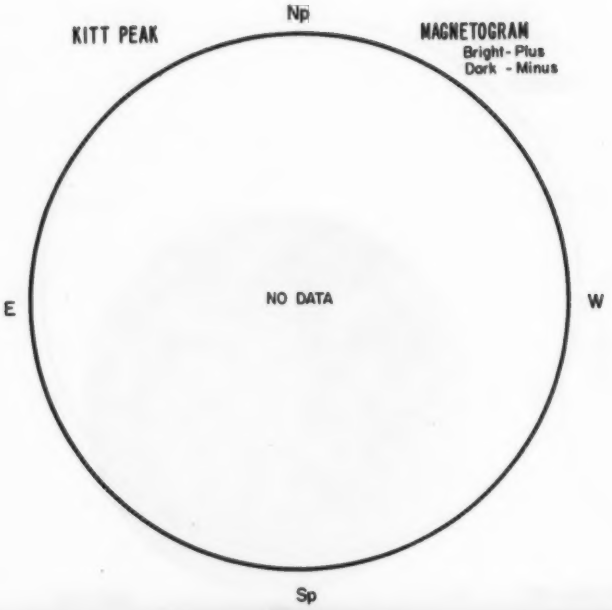
FEBRUARY 27, 1981 (P=-21.03, $B_o$=-7.19, $L_o$=123.88)

SACRAMENTO PEAK Np CORONA 5303 Å

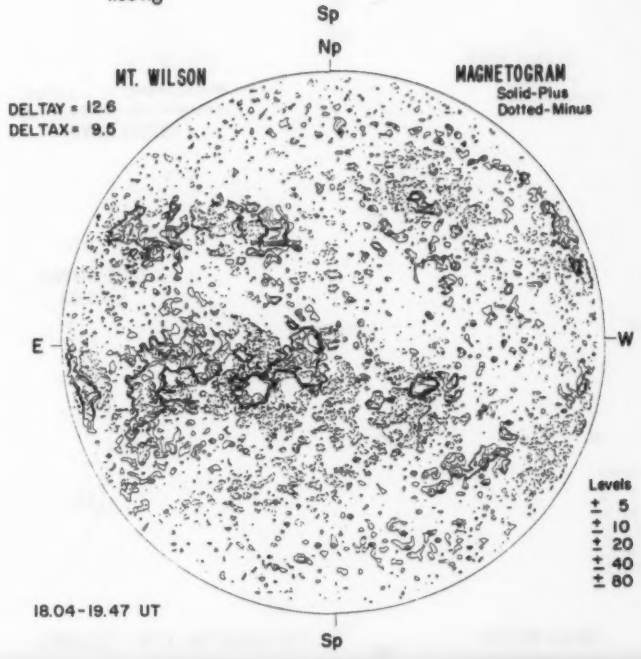
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK




MT. WILSON




27

BOULDER




Hα SAN FERNANDO




SUNSPOTS HALE OBSERVATORIES




CALCIUM REPORT

Sp

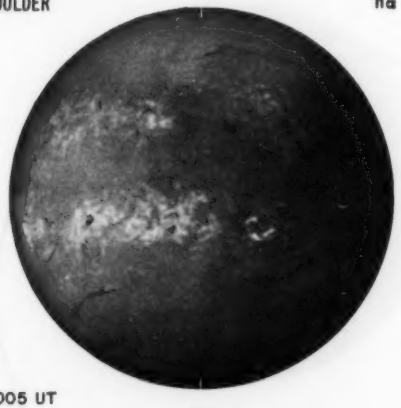
18.04-19.47 UT

Sp

27

BOULDER

Np



E W

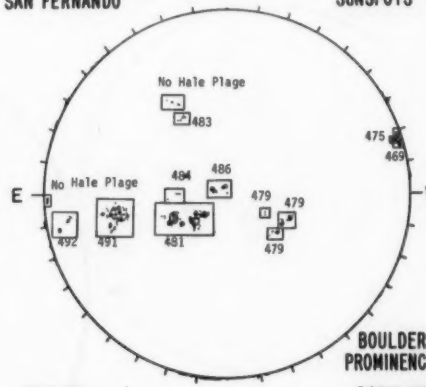
2005 UT

Sp

Hα

SAN FERNANDO

Np




E W

1815 UT

Sp

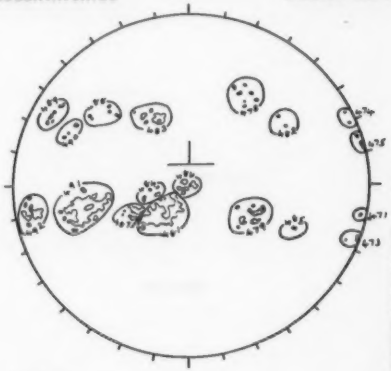
SUNSPOTS

BOULDER PROMINENCES

2005 UT

HALE OBSERVATORIES

Np



E W

2155 UT

Sp

CALCIUM REPORT

| FAIR | | JA |
|---|---|---|
| 73 | 0200 | 3.0 |
| 74 | 0200 | 2.5 |
| 75 | 0300 | 3.0 |
| 78 | 0400 | 3.0 |
| 79 | 0800 | 3.0 |
| 81 | 2800 | 3.5 |
| 83 | 0700 | 3.0 |
| 84 | 0300 | 3.0 |
| 85 | 0100 | 3.0 |
| 86 | 0500 | 3.0 |
| 87 | 0600 | 3.0 |
| 88 | 0300 | 3.0 |
| 89 | 0400 | 3.0 |
| 90 | 0200 | 2.5 |
| 91 | 4300 | 3.5 |
| 92 | 1100 | 3.5 |

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

105

Feb 81

FEBRUARY 28, 1981 (P=-21.29, $B_o$=-7.21, $L_o$=110.71)

SACRAMENTO PEAK Np CORONA 5303 Å

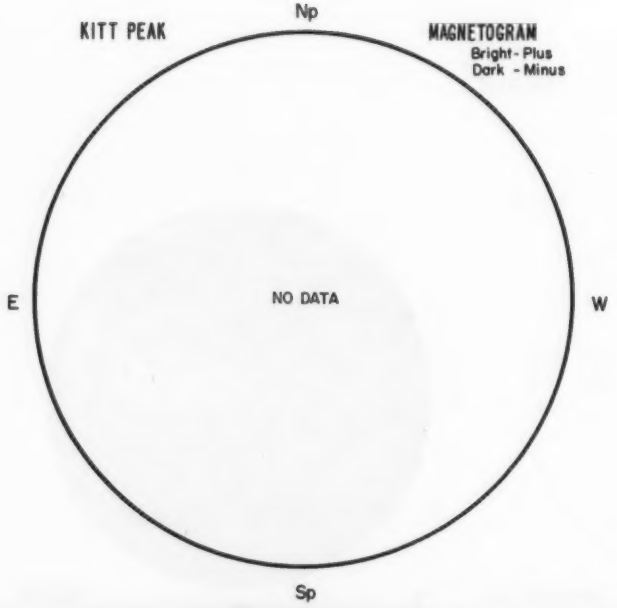
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus




MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

28

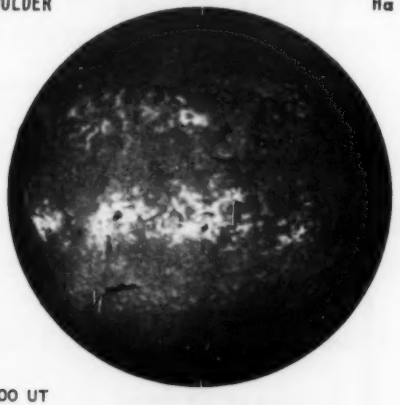
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

28

BOULDER Np Hα

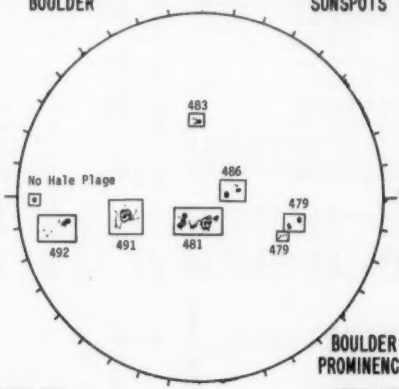


E W

1500 UT

Sp

BOULDER Np




E W E

1520 UT

Sp

SUNSPOTS HALE OBSERVATORIES

BOULDER PROMINENCES

1500 UT

Np

NO DATA

E W

Sp

CALCIUM REPORT

Np

NO DATA

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

Sp

# REGIONS OF SOLAR ACTIVITY

FEBRUARY 1981

HALE REGION 17433 CMP DATE 1.0

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 30 | 17433 | N18 | E17 | 104 | 200 | 2.5 | | | | | | | | | | |
| 81 | 01 | 31 | 17433 | N18 | E06 | 103 | 100 | 2.0 | | N15 | E16 | | | | M | 170 | 13 | DAO |
| 81 | 02 | 1 | 17433 | N18 | W10 | 105 | 200 | 2.5 | | | | | | | | | | |
| 81 | 02 | 2 | 17433 | N18 | W23 | 105 | 100 | 2.0 | | | | | | | | | | |
| 81 | 02 | 3 | 17433 | N19 | W35 | 104 | 100 | 2.0 | | | | | | | | | | |

HALE REGION 17428 CMP DATE 1.4 NEW REGION IN LOCATION OF REGION 17371

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 25 | 17428 | S15 | E82 | 103 | 400 | 3.5 | 22046 | S13 | E89 | 100 | B | 1 | P | 20 | 4 | DSO |
| 81 | 01 | 26 | 17428 | S14 | E72 | 102 | 700 | 4.0 | 22046 | S12 | E75 | 100 | ( B) | 4 | B | 990 | 6 | DKI |
| 81 | 01 | 28 | 17428 | | | | | | | S12 | E49 | | | | H | 470 | 18 | DKI |
| 81 | 01 | 29 | 17428 | | | | | | | S13 | E33 | | | | B | 160 | 9 | DRO |
| 81 | 01 | 30 | 17428 | S14 | E22 | 99 | 3100 | 4.0 | | S13 | E20 | | | | B | 380 | 15 | DKI |
| 81 | 01 | 31 | 17428 | S14 | E08 | 101 | 2000 | 3.5 | | S12 | E06 | | | | P | 390 | 18 | EHI |
| 81 | 02 | 1 | 17428 | S14 | W05 | 100 | 2500 | 4.0 | 22046 | S13 | W07 | 103 | (BY) | 5 | H | 300 | 16 | ESI |
| 81 | 02 | 2 | 17428 | S14 | W27 | 109 | 2500 | 3.5 | 22046 | S13 | W20 | 104 | ( B) | 4 | H | 280 | 16 | EHO |
| 81 | 02 | 3 | 17428 | S14 | W32 | 101 | 2000 | 3.5 | 22046 | S13 | W34 | 104 | ( B) | 4 | B | 440 | 2 | DSO |
| 81 | 02 | 4 | 17428 | S14 | W44 | 100 | 2100 | 3.5 | 22046 | S13 | W47 | 104 | (BY) | 4 | H | 130 | 6 | ESO |
| 81 | 02 | 5 | 17428 | S15 | W63 | 103 | 900 | 4.0 | 22046 | S13 | W60 | 104 | ( B) | 4 | H | 190 | 4 | DAO |
| 81 | 02 | 6 | 17428 | S15 | W72 | 101 | 800 | 3.0 | 22046 | S12 | W69 | 100 | (AF) | 4 | B | 80 | 3 | DSO |
| 81 | 02 | 7 | 17428 | S14 | W82 | 97 | 300 | 2.0 | 22046 | S12 | W80 | 97 | AP | 2 | H | 70 | 1 | HSX |
| 81 | 02 | 8 | 17428 | | | | | | | S09 | W85 | | | | H | 270 | 1 | HSX |

HALE REGION 17434 CMP DATE 2.4

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 28 | 17434 | | | | | | | S05 | E62 | | | | H | 10 | 3 | BXO |
| 81 | 01 | 29 | 17434 | | | | | | | S06 | E43 | | | | P | 20 | 2 | AXX |
| 81 | 01 | 30 | 17434 | S04 | E33 | 88 | 500 | 3.5 | | | | | | | | | | |
| 81 | 01 | 31 | 17434 | S04 | E22 | 87 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 1 | 17434 | S04 | E07 | 88 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 2 | 17434 | S04 | W05 | 87 | 300 | 3.0 | | | | | | | | | | |
| 81 | 02 | 3 | 17434 | S04 | W18 | 87 | 200 | 3.0 | | | | | | | | | | |
| 81 | 02 | 4 | 17434 | S05 | W34 | 90 | 100 | 3.0 | | S08 | W29 | | | | B | 170 | 5 | CSI |

HALE REGION 17435 CMP DATE 2.6

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 28 | 17435 | | | | | | | S17 | E63 | | | | H | 40 | 4 | CSO |
| 81 | 01 | 29 | 17435 | | | | | | | S17 | E45 | | | | B | 30 | 4 | CSO |
| 81 | 01 | 30 | 17435 | S18 | E41 | 80 | 300 | 3.5 | | S17 | E34 | | | | B | 100 | 6 | DAO |
| 81 | 01 | 31 | 17435 | S18 | E25 | 84 | 300 | 3.5 | | S17 | E20 | | | | P | 70 | 9 | DAO |
| 81 | 02 | 1 | 17435 | S18 | E12 | 83 | 400 | 3.5 | 22048 | S17 | E08 | 88 | ( B) | 3 | H | 80 | 6 | DAO |
| 81 | 02 | 2 | 17435 | S18 | W03 | 85 | 400 | 3.0 | 22048 | S17 | W04 | 88 | ( B) | 3 | H | 20 | 9 | BXO |
| 81 | 02 | 3 | 17435 | S18 | W15 | 84 | 500 | 3.0 | 22048 | S17 | W15 | 85 | ( B) | 3 | B | 20 | 2 | BXO |
| 81 | 02 | 4 | 17435 | S17 | W27 | 83 | 400 | 3.5 | | S12 | W21 | | | | P | 40 | 9 | BXO |
| 81 | 02 | 5 | 17435 | S17 | W44 | 84 | 300 | 3.0 | | S16 | W40 | | | | B | 10 | 1 | AXX |
| 81 | 02 | 6 | 17435 | S17 | W55 | 84 | 300 | 3.0 | | S13 | W65 | | | | L | 90 | 5 | CAO |
| 81 | 02 | 7 | 17435 | S17 | W69 | 84 | 400 | 2.0 | | S13 | W77 | | | | M | 170 | 1 | HSX |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17436 CMP DATE 3.0 RETURN OF REGION 17375 ROTATION 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 28 | 17436 | | | | | | S11 E69 | | | | H | 830 | 14 | DKI |
| 81 | 01 | 29 | 17436 | | | | | | S11 E53 | | | | B | 320 | 9 | DKO |
| 81 | 01 | 30 | 17436 | S14 E40 | 81 | 5000 | 4.0 | | S12 E40 | | | | B | 570 | 10 | DKO |
| 81 | 01 | 31 | 17436 | S14 E26 | 83 | 3400 | 3.5 | | S12 E27 | | | | P | 590 | 21 | EKO |
| 81 | 02 | 1 | 17436 | S14 E15 | 80 | 3600 | 3.5 | 22049 | S12 E15 | 81 | (BY) | 5 | H | 400 | 28 | EHI |
| 81 | 02 | 2 | 17436 | S14 E02 | 80 | 3000 | 3.5 | 22049 | S11 E02 | 82 | (BY) | 5 | H | 500 | 21 | EKI |
| 81 | 02 | 3 | 17436 | S14 W14 | 83 | 3200 | 3.5 | 22049 | S11 W13 | 83 | (BY) | 5 | B | 300 | 11 | EKO |
| 81 | 02 | 4 | 17436 | S12 W25 | 81 | 3300 | 3.5 | 22049 | S10 W28 | 85 | (BP) | 5 | H | 180 | 13 | CKO |
| 81 | 02 | 5 | 17436 | S10 W42 | 82 | 2600 | 3.0 | 22049 | S09 W43 | 87 | (BY) | 5 | H | 220 | 8 | CKO |
| 81 | 02 | 6 | 17436 | S12 W52 | 81 | 2300 | 3.0 | 22049 | S09 W58 | 89 | (AP) | 4 | B | 130 | 2 | CAO |
| 81 | 02 | 7 | 17436 | S14 W62 | 77 | 2300 | 3.5 | 22074 | S12 W61 | 78 | (AF) | 2 | H | 460 | 28 | EAI |
| 81 | 02 | 7 | 17436 | S14 W62 | 77 | 2300 | 3.5 | 22049 | S10 W70 | 87 | (AP) | 3 | H | 200 | 1 | HSX |
| 81 | 02 | 8 | 17436 | | | | | | S15 W66 | | | | H | 620 | 14 | EAI |
| 81 | 02 | 9 | 17436 | | | | | | S15 W82 | | | | H | 340 | 5 | EAO |

HALE REGION 17439 CMP DATE 3.5

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 28 | 17439 | | | | | | N15 E78 | | | | H | 20 | 3 | BXO |
| 81 | 01 | 29 | 17439 | | | | | | N13 E61 | | | | B | 80 | 1 | HSX |
| 81 | 01 | 30 | 17439 | N15 E52 | 69 | 1200 | 3.5 | | N14 E53 | | | | B | 50 | 4 | CAO |
| 81 | 01 | 31 | 17439 | N15 E38 | 71 | 1200 | 3.0 | | N12 E40 | | | | P | 30 | 6 | CRO |
| 81 | 02 | 1 | 17439 | N14 E25 | 70 | 1000 | 3.0 | 22050 | N14 E24 | 72 | (AP) | 3 | H | 30 | 3 | CRO |
| 81 | 02 | 2 | 17439 | N14 E12 | 70 | 1000 | 3.5 | 22050 | N14 E12 | 72 | (BP) | 2 | H | 10 | 6 | BXO |
| 81 | 02 | 3 | 17439 | N14 W04 | 73 | 1000 | 3.0 | 22050 | N13 W02 | 72 | (AP) | 2 | P | 10 | 2 | HRX |
| 81 | 02 | 4 | 17439 | N15 W15 | 71 | 1000 | 3.5 | 22050 | N15 W11 | 68 | (AF) | 2 | H | 160 | 1 | HHX |
| 81 | 02 | 5 | 17439 | N15 W32 | 72 | 800 | 3.0 | | N16 W41 | | | | H | 40 | 1 | HSX |
| 81 | 02 | 6 | 17439 | N15 W44 | 73 | 700 | 3.0 | | | | | | | | | |
| 81 | 02 | 7 | 17439 | N14 W58 | 73 | 400 | 3.0 | | N16 W68 | | | | L | | 1 | AXX |

HALE REGION 17437 CMP DATE 4.5 RETURN OF REGION 17386 ROTATION 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 29 | 17437 | | | | | | S09 E78 | | | | B | 10 | 1 | AXX |
| 81 | 01 | 30 | 17437 | S08 E64 | 57 | 600 | 4.0 | | S09 E62 | | | | B | 40 | 3 | CRO |
| 81 | 01 | 31 | 17437 | S08 E52 | 57 | 700 | 3.0 | | S09 E51 | | | | P | 30 | 4 | BXO |
| 81 | 02 | 1 | 17437 | S08 E37 | 58 | 700 | 3.0 | 22053 | S08 E36 | 60 | (AP) | 2 | B | 10 | 1 | AXX |
| 81 | 02 | 2 | 17437 | S08 E25 | 57 | 700 | 3.0 | 22053 | S08 E25 | 59 | (AP) | 2 | | | | |
| 81 | 02 | 3 | 17437 | S08 E11 | 58 | 700 | 3.0 | 22053 | S08 E12 | 58 | (BP) | 3 | B | 20 | 4 | BXO |
| 81 | 02 | 4 | 17437 | S08 W03 | 59 | 600 | 3.5 | 22053 | S09 W01 | 58 | ( B) | 3 | H | 30 | 5 | DSO |
| 81 | 02 | 5 | 17437 | S08 W18 | 58 | 600 | 3.0 | 22053 | S08 W15 | 59 | ( B) | 3 | H | 20 | 5 | CRO |
| 81 | 02 | 6 | 17437 | S08 W32 | 61 | 600 | 3.0 | 22053 | S08 W32 | 63 | (AP) | 3 | B | 10 | 5 | BXO |
| 81 | 02 | 7 | 17437 | S08 W46 | 61 | 600 | 3.0 | 22053 | S08 W43 | 60 | (AP) | 2 | L | 20 | 6 | BXO |
| 81 | 02 | 8 | 17437 | | | | | | S12 W65 | | | | B | 470 | 6 | EKI |
| 81 | 02 | 9 | 17437 | | | | | | S12 W73 | | | | B | 170 | 1 | HSX |
| 81 | 02 | 10 | 17437 | S08 W85 | 61 | 300 | 2.5 | | | | | | | | | |

HALE REGION 17438 CMP DATE 4.5 FRONT NEW, REAR 17379 ROTATIONS 1 AND 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 30 | 17438 | S15 E68 | 53 | 400 | 3.0 | | | | | | | | | |
| 81 | 01 | 31 | 17438 | S16 E51 | 58 | 500 | 3.0 | | S18 E45 | | | | P | 20 | 2 | AXX |
| 81 | 02 | 1 | 17438 | S16 E36 | 59 | 600 | 3.0 | 22051 | S15 E34 | 62 | (AP) | 2 | H | 20 | 4 | BXO |
| 81 | 02 | 2 | 17438 | S16 E24 | 58 | 600 | 3.0 | 22051 | S15 E17 | 67 | (AF) | 2 | | | | |
| 81 | 02 | 3 | 17438 | S16 E08 | 61 | 900 | 3.0 | 22051 | S15 E06 | 64 | (BY) | 2 | B | 10 | 2 | BXO |
| 81 | 02 | 4 | 17438 | S15 W04 | 60 | 600 | 3.0 | 22051 | S15 W07 | 64 | (BY) | 3 | H | 10 | 6 | BXO |
| 81 | 02 | 5 | 17438 | S15 W24 | 64 | 1400 | 3.0 | 22051 | S15 W23 | 67 | ( B) | 3 | H | 20 | 11 | BXO |
| 81 | 02 | 6 | 17438 | S15 W35 | 64 | 1200 | 3.0 | 22051 | S15 W35 | 66 | ( B) | 3 | B | 170 | 14 | DAO |
| 81 | 02 | 7 | 17438 | S16 W47 | 62 | 700 | 3.5 | 22051 | S15 W51 | 68 | ( D) | 4 | H | 460 | 28 | EAI |
| 81 | 02 | 8 | 17438 | | | | | | S16 W55 | | | | M | 340 | 27 | DKI |

CONTD

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17438 (CONT) CMP DATE 4.5 FRONT NEW, REAR 17379 ROTATIONS 1 AND 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 9 | 17438 | | | | | | S12 W73 | | | | B | 170 | 1 | HSX |
| 81 | 02 | 10 | 17438 | S16 W80 | 56 | 400 | 2.5 | | S14 W79 | | | | L | 500 | 6 | DAO |

HALE REGION 17440 CMP DATE 4.5 NEW, IN LOCATION OF FRONT HALF OF 17377

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 29 | 17440 | | | | | | N18 E71 | | | | B | 160 | 1 | HAX |
| 81 | 01 | 30 | 17440 | N18 E63 | 58 | 1900 | 4.0 | | N18 E61 | | | | B | 280 | 2 | CKO |
| 81 | 01 | 31 | 17440 | N18 E52 | 57 | 1900 | 4.0 | | N18 E48 | | | | P | 560 | 4 | CKO |
| 81 | 02 | 1 | 17440 | N18 E36 | 59 | 1600 | 3.5 | 22052 | N19 E35 | 61 | (AP) | 5 | H | 350 | 2 | HHX |
| 81 | 02 | 2 | 17440 | N18 E24 | 58 | 1600 | 3.5 | 22052 | N19 E22 | 62 | (BP) | 5 | H | 480 | 5 | CKO |
| 81 | 02 | 3 | 17440 | N18 E10 | 59 | 1600 | 3.5 | 22052 | N19 E10 | 60 | (BP) | 5 | B | 10 | 1 | HHX |
| 81 | 02 | 4 | 17440 | N18 W03 | 59 | 1900 | 3.5 | 22052 | N19 W04 | 61 | (BP) | 5 | H | 160 | 1 | HHX |
| 81 | 02 | 5 | 17440 | N18 W18 | 58 | 1500 | 3.0 | 22052 | N19 W17 | 61 | (AP) | 6 | H | 370 | 2 | HHX |
| 81 | 02 | 5 | 17440 | N18 W18 | 58 | 1500 | 3.0 | 22065 | N25 W15 | 59 | (AP) | 3 | R | 430 | 2 | HKX |
| 81 | 02 | 6 | 17440 | N18 W28 | 57 | 1200 | 3.5 | 22052 | N19 W31 | 62 | (AP) | 6 | B | 280 | 1 | DHX |
| 81 | 02 | 7 | 17440 | N18 W44 | 59 | 1000 | 3.0 | 22052 | N19 W44 | 61 | (AP) | 5 | H | 320 | 1 | HHX |
| 81 | 02 | 10 | 17440 | N16 E78 | 258 | 400 | 2.5 | | N11 E78 | | | | H | 170 | 1 | HSX |

HALE REGION 17441 CMP DATE 5.5 RETURN OF REGION 17387 ROTATION 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 29 | 17441 | | | | | | N20 E79 | | | | L | 250 | 1 | HAX |
| 81 | 01 | 30 | 17441 | N15 E72 | 49 | 800 | 4.0 | | N14 E70 | | | | B | 20 | 1 | HRX |
| 81 | 01 | 31 | 17441 | N15 E62 | 47 | 500 | 3.5 | | N13 E59 | | | | P | 10 | 4 | BXO |
| 81 | 02 | 1 | 17441 | N15 E45 | 50 | 800 | 3.0 | 22054 | N15 E43 | 53 | (AP) | 3 | H | 30 | 1 | AXX |
| 81 | 02 | 2 | 17441 | N15 E33 | 49 | 900 | 3.0 | 22054 | N15 E30 | 54 | (AP) | 3 | H | 10 | 1 | AXX |
| 81 | 02 | 3 | 17441 | N15 E20 | 49 | 1100 | 3.0 | 22054 | N15 E18 | 52 | (AP) | 2 | B | 30 | 2 | BXO |
| 81 | 02 | 4 | 17441 | N16 E13 | 43 | 1000 | 3.0 | | N19 E17 | | | | P | 20 | 5 | AXX |
| 81 | 02 | 5 | 17441 | N17 W06 | 46 | 800 | 3.0 | | N14 W10 | | | | B | 10 | 2 | BXO |
| 81 | 02 | 6 | 17441 | N17 W14 | 43 | 600 | 3.0 | | N12 W18 | | | | B | | 3 | AXX |
| 81 | 02 | 7 | 17441 | N17 W34 | 49 | 500 | 3.0 | | N18 W43 | | | | P | 310 | 1 | HHX |
| 81 | 02 | 8 | 17441 | | | | | | N19 W47 | | | | L | 320 | 2 | CHO |
| 81 | 02 | 9 | 17441 | | | | | | N18 W60 | | | | M | 490 | 5 | CKO |
| 81 | 02 | 10 | 17441 | N17 W63 | 39 | 400 | 2.5 | | N20 W73 | | | | L | 190 | 5 | CKO |

HALE REGION 17443 CMP DATE 5.6

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 31 | 17443 | N19 E68 | 41 | 400 | 3.5 | | N14 E68 | | | | M | 10 | 1 | AXX |
| 81 | 02 | 1 | 17443 | N18 E52 | 43 | 500 | 3.0 | | N15 E43 | | | | H | 30 | 1 | AXX |
| 81 | 02 | 2 | 17443 | N18 E38 | 44 | 1200 | 3.0 | | N15 E30 | | | | H | 10 | 1 | AXX |
| 81 | 02 | 3 | 17443 | N21 E23 | 46 | 500 | 2.5 | | N19 E19 | | | | M | 510 | 4 | CHO |
| 81 | 02 | 4 | 17443 | N21 E11 | 45 | 400 | 3.0 | | N19 E17 | | | | P | 20 | 5 | AXX |
| 81 | 02 | 5 | 17443 | N23 W05 | 45 | 200 | 2.5 | 22067 | N23 W03 | 47 | (AP) | 3 | M | 390 | 1 | HHX |
| 81 | 02 | 6 | 17443 | N23 W14 | 43 | 200 | 2.5 | | N19 W20 | | | | L | 360 | 5 | CHO |
| 81 | 02 | 7 | 17443 | N23 W32 | 47 | 200 | 3.0 | | N19 W37 | | | | M | 350 | 1 | HHX |
| 81 | 02 | 8 | 17443 | | | | | | N18 W49 | | | | M | 340 | 1 | HHX |
| 81 | 02 | 9 | 17443 | | | | | | N19 W68 | | | | B | 200 | 2 | HSX |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17447 CMP DATE 5.9

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 3 | 17447 | S14 E27 | 42 | 200 | 3.0 | 22061 | S13 E27 | 43 | (AP) | 2 | L | 10 | 4 | BXO |
| 81 | 02 | 3 | 17447 | S14 E27 | 42 | 200 | 3.0 | 22060 | S13 E18 | 52 | (AP) | 1 | B | 20 | 4 | BXO |
| 81 | 02 | 4 | 17447 | S14 E15 | 41 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 5 | 17447 | S14 W01 | 41 | 100 | 3.0 | 22060 | S15 W09 | 53 | (BP) | 3 | H | 10 | 3 | HRX |
| 81 | 02 | 6 | 17447 | S14 W12 | 41 | 100 | 2.0 | 22060 | S15 W25 | 56 | AP | 2 | B | | 1 | AXX |
| 81 | 02 | 7 | 17447 | S14 W26 | 41 | 100 | 2.0 | 22060 | S15 W35 | 52 | (AP) | 2 | M | 330 | 18 | DAI |

HALE REGION 17455 CMP DATE 6.0

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 5 | 17455 | S07 E01 | 39 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 6 | 17455 | S07 W12 | 41 | 100 | 3.0 | | S08 W20 | | | | L | 20 | 9 | BXO |
| 81 | 02 | 7 | 17455 | S07 W26 | 41 | 200 | 3.0 | 22075 | S07 W23 | 40 | ( B) | 3 | H | 20 | 4 | CRO |
| 81 | 02 | 8 | 17455 | | | | | | S08 W35 | | | | H | 10 | 1 | HSX |
| 81 | 02 | 9 | 17455 | | | | | | S07 W48 | | | | B | 50 | 3 | CSO |
| 81 | 02 | 10 | 17455 | S07 W62 | 38 | 500 | 3.0 | | S08 W60 | | | | H | 50 | 4 | DAO |
| 81 | 02 | 11 | 17455 | | | | | 22075 | S06 W75 | 40 | B | 2 | H | | 2 | AXX |
| 81 | 02 | 12 | 17455 | | | | | 22075 | S06 W87 | 39 | X | 1 | | | | |

HALE REGION 17449 CMP DATE 7.6

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 3 | 17449 | S23 E50 | 19 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 4 | 17449 | S23 E37 | 19 | 100 | 2.0 | | | | | | | | | |

HALE REGION 17452 CMP DATE 7.7

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 4 | 17452 | N02 E42 | 14 | 100 | 2.0 | | | | | | | | | |
| 81 | 02 | 5 | 17452 | N03 E26 | 14 | 400 | 3.0 | 22068 | N01 E29 | 15 | (BP) | 4 | H | 20 | 5 | CAO |
| 81 | 02 | 6 | 17452 | N03 E15 | 14 | 500 | 3.0 | 22068 | N02 E14 | 17 | ( B) | 4 | B | 40 | 8 | CSO |
| 81 | 02 | 7 | 17452 | N03 W03 | 18 | 400 | 3.0 | 22068 | N02 W01 | 18 | (BP) | 4 | H | 20 | 1 | HRX |
| 81 | 02 | 8 | 17452 | | | | | | N03 W16 | | | | H | 20 | 1 | HSX |
| 81 | 02 | 9 | 17452 | | | | | | N03 W29 | | | | B | 40 | 1 | HSX |
| 81 | 02 | 10 | 17452 | N03 W39 | 15 | 300 | 3.0 | | N04 W43 | | | | H | 20 | 1 | HAX |
| 81 | 02 | 11 | 17452 | | | | | 22068 | N04 W57 | 22 | AP | 2 | H | 10 | 1 | RX |
| 81 | 02 | 12 | 17452 | N04 W65 | 15 | 100 | 2.0 | 22068 | N03 W70 | 22 | (AP) | 1 | L | 10 | 1 | AXX |

HALE REGION 17444 CMP DATE 8.4

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 2 | 17444 | N14 E72 | 10 | 300 | 3.0 | 22055 | N15 E78 | 6 | AP | 1 | | | | |
| 81 | 02 | 3 | 17444 | N15 E63 | 6 | 400 | 3.0 | 22055 | N16 E63 | 7 | (AP) | 2 | P | | 1 | AXX |
| 81 | 02 | 4 | 17444 | N15 E49 | 7 | 700 | 3.0 | | | | | | | | | |
| 81 | 02 | 7 | 17444 | N15 E06 | 9 | 500 | 2.5 | | | | | | | | | |
| 81 | 02 | 9 | 17444 | | | | | | N12 E14 | | | | M | 660 | 38 | FKI |

# REGIONS OF SOLAR ACTIVITY

FEBRUARY 1981

HALE REGION 17450 CMP DATE 8.7

| CALCIUM PLAGE DATA | | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 4 | 17450 | S06 | W44 | 100 | 300 | 3.0 | 22063 | S07 | W42 | 99 | (AF) | 2 | B | 120 | 4 | DSO |
| 81 | 02 | 5 | 17450 | S06 | W60 | 100 | 200 | 2.5 | | | | | | | | | | |
| 81 | 02 | 6 | 17450 | S06 | W75 | 104 | 100 | 3.0 | | S11 | W73 | | | | B | 80 | 3 | DSO |

HALE REGION 17448 CMP DATE 8.9 RETURN OF REGIONS 17384 AND 17389 ROTATIONS 2 AND 4

| CALCIUM PLAGE DATA | | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 2 | 17448 | | | | | | 22056 | N05 | E87 | 357 | AP | 1 | H | 140 | 1 | HSX |
| 81 | 02 | 3 | 17448 | N05 | E70 | 359 | 800 | 3.0 | 22056 | N05 | E71 | 359 | (BP) | 2 | B | 200 | 2 | HSX |
| 81 | 02 | 3 | 17448 | | | | | | 22062 | N05 | E64 | | (AP) | 1 | P | 160 | 4 | CSO |
| 81 | 02 | 4 | 17448 | N05 | E57 | 359 | 2000 | 3.0 | 22056 | N04 | E59 | 358 | (BP) | 4 | H | 200 | 6 | DAO |
| 81 | 02 | 5 | 17448 | N05 | E42 | 358 | 2000 | 3.0 | 22069 | N10 | E45 | 359 | (AP) | 2 | H | | 1 | AXX |
| 81 | 02 | 5 | 17448 | N05 | E42 | 358 | 2000 | 3.0 | 22056 | N04 | E46 | 358 | (BP) | 4 | H | 60 | 8 | CAO |
| 81 | 02 | 5 | 17448 | | | | | | 22062 | N05 | E35 | 9 | (AP) | 3 | H | | 1 | AXX |
| 81 | 02 | 6 | 17448 | N06 | E32 | 357 | 2300 | 3.0 | 22056 | N04 | E31 | | (AP) | 4 | B | 100 | 6 | HSX |
| 81 | 02 | 6 | 17448 | N06 | E32 | 357 | 2300 | 3.0 | 22069 | N11 | E31 | | ( B) | 3 | P | 10 | 2 | BXO |
| 81 | 02 | 6 | 17448 | | | | | | 22062 | N05 | E21 | 10 | (AP) | 3 | B | | 1 | AXX |
| 81 | 02 | 7 | 17448 | N06 | E14 | 1 | 2500 | 3.0 | 22069 | N10 | E18 | 359 | ( B) | 2 | H | 50 | 2 | HAX |
| 81 | 02 | 7 | 17448 | N06 | E14 | 1 | 2500 | 3.0 | 22056 | N04 | E16 | 1 | (BP) | 4 | H | 50 | 2 | HAX |
| 81 | 02 | 8 | 17448 | | | | | | | N05 | E02 | | | | H | 30 | 2 | HAX |
| 81 | 02 | 9 | 17448 | | | | | | | N04 | W12 | | | | B | 10 | 1 | AXX |
| 81 | 02 | 10 | 17448 | N06 | W25 | 1 | 2700 | 3.5 | | N09 | W25 | | | | H | 50 | 5 | CAO |
| 81 | 02 | 11 | 17448 | | | | | | 22056 | N04 | W36 | 1 | AP | 3 | H | 10 | 3 | AXX |
| 81 | 02 | 12 | 17448 | N07 | W51 | 1 | 1900 | 3.0 | 22056 | N03 | W49 | 1 | (AP) | 3 | L | 120 | 8 | DAO |
| 81 | 02 | 12 | 17448 | N07 | W51 | 1 | 1900 | 3.0 | 22069 | N09 | W52 | 4 | (AP) | 4 | H | 20 | 5 | CSO |
| 81 | 02 | 13 | 17448 | N07 | W66 | 1 | 1500 | 3.0 | 22069 | N09 | W69 | 7 | AP | 2 | H | | 2 | AXX |
| 81 | 02 | 14 | 17448 | N07 | W70 | 353 | 400 | 2.5 | | N08 | W71 | | | | L | | 1 | AXX |

HALE REGION 17445 CMP DATE 9.1 NEW, IN LOCATION OF REGION 17400

| CALCIUM PLAGE DATA | | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 2 | 17445 | S13 | E83 | 359 | 200 | 2.5 | | | | | | | | | | |
| 81 | 02 | 3 | 17445 | S14 | E75 | 354 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 4 | 17445 | S14 | E60 | 356 | 1100 | 3.0 | | | | | | | | | | |
| 81 | 02 | 5 | 17445 | S15 | E44 | 356 | 1500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 6 | 17445 | S14 | E33 | 356 | 1400 | 3.0 | | S14 | E38 | | | | L | 10 | 2 | AXX |
| 81 | 02 | 7 | 17445 | S14 | E17 | 358 | 1200 | 3.5 | | S14 | E25 | | | | L | 10 | 5 | BXO |
| 81 | 02 | 8 | 17445 | | | | | | | S13 | E12 | | | | L | 10 | 2 | AXX |
| 81 | 02 | 10 | 17445 | S15 | W22 | 358 | 1000 | 3.0 | | | | | | | | | | |
| 81 | 02 | 12 | 17445 | S14 | W49 | 359 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 13 | 17445 | S13 | W64 | 359 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 14 | 17445 | S13 | W74 | 357 | 300 | 2.5 | | | | | | | | | | |

HALE REGION 17451 CMP DATE 9.6

| CALCIUM PLAGE DATA | | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 4 | 17451 | N28 | E65 | 351 | 100 | 3.0 | | N28 | E62 | | | | P | 10 | 2 | BXO |
| 81 | 02 | 5 | 17451 | N28 | E48 | 352 | 200 | 2.5 | 22070 | N28 | E50 | 354 | ( B) | 3 | R | 20 | 3 | BXO |
| 81 | 02 | 6 | 17451 | N28 | E37 | 352 | 200 | 2.5 | | N30 | E45 | | | | L | 10 | 3 | BXO |
| 81 | 02 | 7 | 17451 | N29 | E22 | 353 | 200 | 2.5 | 22070 | N28 | E21 | 356 | (AP) | 2 | H | | 1 | AXX |
| 81 | 02 | 10 | 17451 | N28 | W15 | 351 | 200 | 3.5 | | N28 | W14 | | | | H | 20 | 3 | CRO |
| 81 | 02 | 11 | 17451 | | | | | | 22070 | N29 | W25 | 350 | AP | 3 | H | 10 | 2 | AXX |
| 81 | 02 | 12 | 17451 | N28 | W40 | 350 | 300 | 3.0 | 22070 | N28 | W36 | 348 | (AF) | 3 | H | | 1 | AXX |
| 81 | 02 | 13 | 17451 | N30 | W52 | 347 | 300 | 2.5 | 22070 | N27 | W46 | 344 | AF | 1 | B | 20 | 3 | BXO |
| 81 | 02 | 14 | 17451 | N31 | W65 | 348 | 100 | 2.5 | | | | | | | | | | |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17429 CMP DATE 9.7

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 01 | 26 | 17429 | N15 E80 | 94 | 200 | 2.5 | | | | | | | | | |
| 81 | 01 | 28 | 17429 | | | | | | N16 E59 | | | | H | 440 | 9 | DAO |
| 81 | 01 | 29 | 17429 | | | | | | N15 E44 | | | | B | 140 | 2 | DRO |
| 81 | 01 | 29 | 17429 | | | | | | N15 E44 | | | | B | 140 | 2 | DRO |
| 81 | 01 | 30 | 17429 | N15 E33 | 88 | 3800 | 4.0 | | N16 E33 | | | | B | 250 | 18 | DKI |
| 81 | 01 | 31 | 17429 | N15 E23 | 86 | 2700 | 3.5 | | N13 E19 | | | | P | 310 | 15 | DKO |
| 81 | 02 | 1 | 17429 | N15 E06 | 89 | 2900 | 3.5 | 22047 | N15 E05 | 91 | (BP) | 5 | H | 170 | 5 | DAI |
| 81 | 02 | 2 | 17429 | N15 W07 | 89 | 2900 | 3.5 | 22047 | N15 W06 | 90 | (BP) | 4 | H | 170 | 15 | EAI |
| 81 | 02 | 3 | 17429 | N15 W22 | 91 | 2400 | 3.0 | 22047 | N15 W20 | 90 | (BP) | 4 | B | 100 | 5 | DSO |
| 81 | 02 | 4 | 17429 | N15 W33 | 89 | 2500 | 3.5 | 22047 | N15 W35 | 92 | (BP) | 3 | H | 30 | 3 | CSO |
| 81 | 02 | 5 | 17429 | N15 W48 | 88 | 1900 | 3.0 | 22047 | N16 W49 | 93 | (AP) | 3 | H | 30 | 1 | HAX |
| 81 | 02 | 6 | 17429 | N14 W58 | 87 | 1000 | 3.0 | 22047 | N15 W64 | 95 | AP | 2 | L | 10 | 3 | AXX |
| 81 | 02 | 7 | 17429 | N15 W76 | 91 | 800 | 2.5 | | N16 W68 | | | | L | | 1 | AXX |

HALE REGION 17453 CMP DATE 9.7 RETURN OF NORTHERN TIP OF REGION 17391 ROTATION 4

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 4 | 17453 | N16 E72 | 344 | 400 | 3.0 | | N12 E74 | | | | H | 200 | 3 | CAO |
| 81 | 02 | 5 | 17453 | N17 E55 | 345 | 600 | 3.0 | | N17 E48 | | | | H | | 1 | AXX |
| 81 | 02 | 6 | 17453 | N17 E43 | 346 | 600 | 3.0 | | N12 E40 | | | | L | 10 | 3 | BXO |
| 81 | 02 | 7 | 17453 | N17 E28 | 347 | 600 | 3.0 | 22076 | N17 E27 | 350 | (AP) | 2 | H | | 1 | AXX |
| 81 | 02 | 10 | 17453 | N17 W14 | 350 | 600 | 3.0 | | | | | | | | | |
| 81 | 02 | 11 | 17453 | | | | | 22076 | N16 W27 | 352 | AP | 2 | L | 450 | 16 | DRO |
| 81 | 02 | 12 | 17453 | N17 W42 | 352 | 300 | 3.0 | 22076 | N16 W41 | 353 | (AP) | 3 | H | | 1 | AXX |
| 81 | 02 | 13 | 17453 | N17 W54 | 349 | 300 | 3.0 | 22076 | N17 W57 | 355 | AP | 2 | L | | 1 | AXX |
| 81 | 02 | 14 | 17453 | N18 W66 | 349 | 200 | 3.0 | | | | | | | | | |

HALE REGION 17457 CMP DATE 10.6 RETURN OF REGION 17401 ROTATION 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 5 | 17457 | S17 E66 | 334 | 300 | 2.5 | | | | | | | | | |
| 81 | 02 | 6 | 17457 | S17 E53 | 336 | 300 | 3.0 | 22072 | S17 E54 | 337 | (AP) | 3 | P | 10 | 3 | AXX |
| 81 | 02 | 7 | 17457 | S16 E38 | 337 | 500 | 2.5 | 22072 | S18 E41 | 336 | ( B) | 4 | H | 90 | 9 | CAO |
| 81 | 02 | 8 | 17457 | | | | | | S17 E26 | | | | H | 50 | 8 | CAO |
| 81 | 02 | 9 | 17457 | | | | | | S17 E12 | | | | B | 20 | 3 | BXO |
| 81 | 02 | 10 | 17457 | S16 W03 | 339 | 600 | 3.0 | | | | | | | | | |
| 81 | 02 | 11 | 17457 | | | | | 22072 | S22 W06 | 331 | B | 3 | H | | 1 | AXX |
| 81 | 02 | 11 | 17457 | | | | | 22078 | S17 W15 | 340 | B | 2 | H | | 1 | AXX |
| 81 | 02 | 12 | 17457 | S16 W28 | 338 | 900 | 3.5 | 22072 | S22 W19 | 331 | ( B) | 2 | H | 10 | 4 | BXO |
| 81 | 02 | 12 | 17457 | S16 W28 | 338 | 900 | 3.5 | 22078 | S17 W27 | 339 | ( B) | 4 | H | 50 | 7 | DAO |
| 81 | 02 | 13 | 17457 | S16 W44 | 339 | 400 | 3.0 | 22078 | S17 W43 | 341 | B | 2 | H | 10 | 2 | BXO |
| 81 | 02 | 14 | 17457 | S15 W55 | 338 | 400 | 3.0 | | | | | | | | | |
| 81 | 02 | 15 | 17457 | S16 W70 | 339 | 300 | 2.5 | | | | | | | | | |
| 81 | 02 | 16 | 17457 | S16 W81 | 339 | 200 | 3.0 | | | | | | | | | |

HALE REGION 17456 CMP DATE 10.9 RETURN OF REGION 17392 ROTATION 4

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 5 | 17456 | N23 E66 | 334 | 200 | 3.0 | 22071 | N23 E70 | 334 | (AP) | 3 | H | | 1 | AXX |
| 81 | 02 | 6 | 17456 | N22 E52 | 337 | 300 | 3.0 | 22071 | N23 E57 | 334 | (AP) | 3 | B | 10 | 1 | HRX |
| 81 | 02 | 7 | 17456 | N23 E38 | 337 | 300 | 3.0 | 22071 | N22 E44 | 333 | (AP) | 3 | P | 10 | 1 | AXX |
| 81 | 02 | 8 | 17456 | | | | | | N22 E26 | | | | H | | 1 | AXX |
| 81 | 02 | 9 | 17456 | | | | | | N21 E12 | | | | H | 20 | 4 | BXO |
| 81 | 02 | 10 | 17456 | N22 E02 | 334 | 300 | 3.0 | | N22 E09 | | | | L | 20 | 7 | BXO |
| 81 | 02 | 12 | 17456 | N22 W26 | 336 | 100 | 2.0 | | N17 W32 | | | | L | 10 | 3 | BXO |
| 81 | 02 | 13 | 17456 | N23 W39 | 334 | 300 | 3.0 | 22083 | N22 W40 | 338 | ( B) | 4 | H | 20 | 3 | BXO |
| 81 | 02 | 14 | 17456 | N23 W53 | 336 | 300 | 3.0 | 22083 | N22 W53 | 338 | BP | 4 | H | 80 | 3 | DAO |
| 81 | 02 | 15 | 17456 | N23 W68 | 337 | 400 | 3.0 | 22083 | N23 W66 | 338 | (BP) | 3 | B | 90 | 1 | HSX |
| 81 | 02 | 16 | 17456 | N22 W78 | 336 | 200 | 3.0 | | N22 W72 | | | | H | 80 | 1 | HRX |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17454 CMP DATE 11.2 NEW, IN LOCATION OF REAR OF 17391

| | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 4 | 17454 | N13 E78 | 338 | 200 | 3.0 | 22064 | N12 E78 | 339 | (AP) | 4 | H | 200 | 3 | CAO |
| 81 | 02 | 5 | 17454 | N13 E66 | 334 | 1600 | 3.5 | 22064 | N12 E70 | 334 | ( B) | 4 | H | 1420 | 7 | FKO |
| 81 | 02 | 6 | 17454 | N12 E57 | 332 | 1700 | 3.5 | 22064 | N13 E57 | 334 | ( B) | 5 | B | 290 | 17 | FAO |
| 81 | 02 | 7 | 17454 | N14 E42 | 333 | 1800 | 3.5 | 22064 | N12 E44 | 333 | ( D) | 5 | H | 670 | 20 | FKI |
| 81 | 02 | 8 | 17454 | | | | | | N12 E32 | | | | H | 980 | 34 | FKI |
| 81 | 02 | 9 | 17454 | | | | | | N11 E17 | | | | B | 770 | 14 | F I |
| 81 | 02 | 10 | 17454 | N12 E05 | 331 | 5100 | 3.5 | | N12 E04 | | | | H | 850 | 34 | FKI |
| 81 | 02 | 11 | 17454 | | | | | 22064 | N11 W09 | 334 | ( B) | 5 | H | 840 | 46 | FKI |
| 81 | 02 | 12 | 17454 | N12 W22 | 332 | 5900 | 3.5 | 22064 | N11 W20 | 332 | ( D) | 5 | H | 880 | 63 | FKI |
| 81 | 02 | 13 | 17454 | | | | | 22064 | N12 W34 | 332 | ( B) | 5 | H | 1010 | 41 | FKI |
| 81 | 02 | 14 | 17454 | N14 W48 | 331 | 5700 | 3.5 | 22064 | N12 W48 | 333 | B | 5 | H | 840 | 29 | FKI |
| 81 | 02 | 15 | 17454 | N14 W62 | 331 | 3000 | 3.5 | 22064 | N13 W60 | 332 | ( B) | 4 | B | 680 | 9 | FKI |
| 81 | 02 | 16 | 17454 | N14 W72 | 330 | 2000 | 3.5 | 22064 | N13 W71 | 330 | (BF) | 4 | H | 410 | 6 | EAO |
| 81 | 02 | 17 | 17454 | N14 W78 | 322 | 300 | 2.5 | 22064 | N11 W78 | 324 | (AP) | 3 | H | 250 | 2 | HAX |

HALE REGION 17466 CMP DATE 11.2 NEW, IN LOCATION OF REGION 17401

| | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 12 | 17466 | S22 W21 | 331 | 200 | 3.0 | | S22 W19 | | | | H | 10 | 4 | BXO |
| 81 | 02 | 13 | 17466 | S22 W34 | 329 | 400 | 3.0 | | S17 W41 | | | | H | 10 | 2 | BXO |
| 81 | 02 | 14 | 17466 | S20 W44 | 327 | 300 | 3.0 | | S17 W43 | | | | L | | 1 | AXX |
| 81 | 02 | 15 | 17466 | S20 W58 | 327 | 300 | 2.5 | | | | | | | | | |
| 81 | 02 | 16 | 17466 | S22 W70 | 328 | 200 | 3.0 | 22087 | S22 W70 | 329 | (AP) | 2 | | | | |
| 81 | 02 | 17 | 17466 | S22 W82 | 326 | 200 | 2.0 | | | | | | | | | |

HALE REGION 17459 CMP DATE 11.9

| | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 6 | 17459 | S08 E74 | 315 | 200 | 3.0 | | | | | | | | | |
| 81 | 02 | 7 | 17459 | S07 E58 | 317 | 200 | 2.0 | 22077 | S08 E60 | 317 | (AP) | 2 | | | | |
| 81 | 02 | 10 | 17459 | S07 E17 | 319 | 300 | 3.0 | | S08 E18 | | | | H | 20 | 5 | CAO |
| 81 | 02 | 11 | 17459 | | | | | 22077 | S08 E06 | 319 | B | 4 | H | 40 | 8 | CSO |
| 81 | 02 | 12 | 17459 | S07 W11 | 321 | 500 | 3.0 | 22077 | S08 W08 | 320 | ( B) | 3 | H | 30 | 6 | CAO |
| 81 | 02 | 13 | 17459 | S07 W25 | 320 | 800 | 3.5 | 22077 | S08 W24 | 322 | B | 3 | H | 30 | 6 | BXO |
| 81 | 02 | 14 | 17459 | S07 W37 | 320 | 400 | 3.0 | 22077 | S08 W35 | 320 | B | 3 | H | 10 | 3 | BXO |
| 81 | 02 | 15 | 17459 | S07 W51 | 320 | 300 | 3.0 | | | | | | | | | |
| 81 | 02 | 16 | 17459 | S08 W63 | 321 | 300 | 3.0 | | | | | | | | | |
| 81 | 02 | 17 | 17459 | S08 W76 | 320 | 300 | 2.5 | | | | | | | | | |

HALE REGION 17458 CMP DATE 12.4

| | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 5 | 17458 | S29 E81 | 319 | 100 | 3.0 | | | | | | | | | |
| 81 | 02 | 6 | 17458 | S30 E67 | 322 | 300 | 3.0 | 22073 | S28 E66 | 325 | AF | 1 | | | | |
| 81 | 02 | 7 | 17458 | S28 E55 | 320 | 300 | 2.5 | 22073 | S28 E55 | 322 | (AF) | 2 | | | | |
| 81 | 02 | 10 | 17458 | S30 E22 | 314 | 500 | 3.0 | | | | | | | | | |
| 81 | 02 | 12 | 17458 | S31 W05 | 315 | 600 | 3.0 | | | | | | | | | |
| 81 | 02 | 13 | 17458 | S32 W16 | 311 | 300 | 3.0 | | | | | | | | | |
| 81 | 02 | 14 | 17458 | S31 W33 | 316 | 300 | 2.5 | 22084 | S34 W50 | 335 | B | 2 | H | 20 | 2 | AXX |
| 81 | 02 | 15 | 17458 | S30 W42 | 311 | 300 | 2.0 | 22084 | S34 W60 | 332 | (AF) | 2 | | | | |
| 81 | 02 | 16 | 17458 | S31 W50 | 308 | 300 | 2.5 | | | | | | | | | |
| 81 | 02 | 17 | 17458 | S31 W62 | 306 | 200 | 2.0 | | | | | | | | | |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17460 CMP DATE 15.1 RETURN OF REGION 17403 ROTATION 3

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 08 | 17460 | | | | | | | N10 | E70 | | | | H | | 1 | AXX |
| 81 | 02 | 10 | 17460 | N08 | E50 | 286 | 900 | 2.0 | | | | | | | | | | |
| 81 | 02 | 12 | 17460 | N08 | E25 | 285 | 700 | 2.5 | | | | | | | | | | |
| 81 | 02 | 13 | 17460 | N08 | E14 | 281 | 900 | 2.5 | | | | | | | | | | |
| 81 | 02 | 14 | 17460 | N08 | E03 | 280 | 600 | 3.0 | | | | | | | | | | |
| 81 | 02 | 15 | 17460 | N08 | W15 | 284 | 600 | 2.5 | | | | | | | | | | |
| 81 | 02 | 16 | 17460 | N08 | W26 | 284 | 700 | 2.5 | | | | | | | | | | |
| 81 | 02 | 17 | 17460 | N08 | W43 | 287 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 18 | 17460 | N08 | W58 | 289 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 19 | 17460 | N08 | W68 | 288 | 300 | 2.0 | | | | | | | | | | |
| 81 | 02 | 20 | 17460 | N08 | W76 | 282 | 200 | 1.0 | | | | | | | | | | |

HALE REGION 17462 CMP DATE 16.5

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 11 | 17462 | | | | | | 22080 | N12 | E65 | 260 | BP | 3 | H | 250 | 1 | HHX |
| 81 | 02 | 12 | 17462 | N09 | E54 | 256 | 600 | 3.0 | 22080 | N12 | E55 | 257 | (BP) | 4 | H | 290 | 2 | HHX |
| 81 | 02 | 13 | 17462 | N08 | E39 | 256 | 1100 | 4.0 | 22080 | N11 | E40 | 258 | BP | 5 | H | 100 | 3 | HKX |
| 81 | 02 | 14 | 17462 | N08 | E26 | 257 | 1000 | 3.5 | 22080 | N11 | E27 | 258 | AP | 5 | H | 400 | 4 | HHX |
| 81 | 02 | 15 | 17462 | N10 | E10 | 259 | 600 | 3.0 | 22080 | N11 | E14 | 258 | (BP) | 5 | B | 200 | 1 | HSX |
| 81 | 02 | 16 | 17462 | N11 | W03 | 261 | 500 | 3.0 | 22080 | N11 | W00 | 259 | (BP) | 5 | H | 300 | 6 | HKX |
| 81 | 02 | 17 | 17462 | N12 | W15 | 259 | 700 | 3.0 | 22080 | N11 | W14 | 260 | (BP) | 5 | H | 290 | 8 | HKX |
| 81 | 02 | 18 | 17462 | N11 | W28 | 259 | 900 | 3.0 | 22080 | N11 | W27 | 259 | ( D) | 5 | H | 310 | 10 | DHI |
| 81 | 02 | 19 | 17462 | N11 | W41 | 261 | 600 | 3.0 | | N12 | W39 | | | | B | 240 | 3 | CKO |
| 81 | 02 | 20 | 17462 | N11 | W54 | 260 | 500 | 3.0 | 22080 | N11 | W56 | 261 | (AP) | 4 | B | 140 | 1 | HSX |
| 81 | 02 | 21 | 17462 | N12 | W68 | 259 | 500 | 3.0 | 22080 | N12 | W70 | 263 | (AP) | 4 | H | 100 | 1 | HSX |

HALE REGION 17461 CMP DATE 16.7

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 10 | 17461 | N18 | E78 | 258 | 500 | 3.5 | | N18 | E74 | | | | H | 80 | 1 | HSX |
| 81 | 02 | 11 | 17461 | | | | | | 22081 | N18 | E68 | 257 | AP | 4 | H | 160 | 4 | CSO |
| 81 | 02 | 12 | 17461 | N17 | E52 | 258 | 1700 | 3.5 | 22081 | N19 | E53 | 259 | ( B) | 4 | H | 160 | 18 | CSI |
| 81 | 02 | 13 | 17461 | N16 | E38 | 257 | 3000 | 4.0 | 22081 | N18 | E38 | 260 | B | 5 | H | 240 | 23 | CSI |
| 81 | 02 | 14 | 17461 | N16 | E26 | 257 | 3800 | 4.0 | 22081 | N18 | E25 | 260 | B | 4 | B | 160 | 21 | CSI |
| 81 | 02 | 15 | 17461 | N17 | E12 | 257 | 2500 | 3.5 | 22085 | N18 | E06 | 266 | ( B) | 3 | B | 40 | 2 | CSO |
| 81 | 02 | 15 | 17461 | N17 | E12 | 257 | 2500 | 3.5 | 22081 | N18 | E12 | 260 | ( B) | 4 | B | 170 | 10 | CAI |
| 81 | 02 | 16 | 17461 | N17 | W01 | 259 | 2700 | 3.5 | 22085 | N20 | W07 | 266 | (AP) | 3 | H | 290 | 25 | EKO |
| 81 | 02 | 16 | 17461 | N17 | W01 | 259 | 2700 | 3.5 | 22081 | N18 | W01 | 260 | ( D) | 4 | H | 290 | 25 | EKO |
| 81 | 02 | 17 | 17461 | N18 | W14 | 258 | 3000 | 3.5 | 22081 | N19 | W14 | 260 | ( D) | 4 | H | 370 | 34 | EKI |
| 81 | 02 | 18 | 17461 | N18 | W27 | 258 | 3700 | 3.5 | 22081 | N19 | W28 | 260 | ( D) | 5 | H | 400 | 25 | EAI |
| 81 | 02 | 19 | 17461 | N18 | W39 | 259 | 2700 | 3.5 | | N20 | W42 | | | | B | 90 | 7 | BXI |
| 81 | 02 | 20 | 17461 | N18 | W64 | 270 | 2200 | 3.5 | 22081 | N18 | W57 | 262 | ( D) | 4 | B | 390 | 10 | EKO |
| 81 | 02 | 21 | 17461 | N17 | W68 | 259 | 2200 | 3.5 | 22081 | N19 | W71 | 264 | (BP) | 3 | H | 190 | 3 | DAO |
| 81 | 02 | 22 | 17461 | N18 | W75 | 253 | 1800 | 3.5 | 22081 | N17 | W79 | 259 | AP | 1 | B | 120 | 2 | ESO |

HALE REGION 17465 CMP DATE 17.2 NEW, IN LOCATION OF REGION 17408

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 11 | 17465 | | | | | | 22079 | S19 | E69 | 256 | AP | 3 | B | 40 | 1 | HSX |
| 81 | 02 | 12 | 17465 | S23 | E58 | 252 | 400 | 3.0 | 22079 | S19 | E58 | 254 | (AP) | 4 | H | 120 | 1 | HSX |
| 81 | 02 | 13 | 17465 | S24 | E44 | 251 | 800 | 3.0 | 22079 | S19 | E43 | 255 | BP | 4 | B | 30 | 2 | CSO |
| 81 | 02 | 14 | 17465 | S23 | E28 | 255 | 1100 | 3.5 | 22079 | S20 | E30 | 255 | B | 4 | H | 130 | 18 | CAO |
| 81 | 02 | 15 | 17465 | S20 | E16 | 253 | 1700 | 3.5 | 22079 | S20 | E18 | 254 | ( B) | 4 | B | 130 | 5 | CAC |
| 81 | 02 | 16 | 17465 | S20 | E05 | 253 | 1800 | 3.5 | 22079 | S20 | E05 | 254 | ( D) | 4 | H | 180 | 13 | DAO |
| 81 | 02 | 17 | 17465 | S20 | W08 | 252 | 1800 | 3.5 | 22079 | S20 | W08 | 254 | ( B) | 4 | H | 150 | 14 | DAO |
| 81 | 02 | 18 | 17465 | S21 | W22 | 253 | 1500 | 3.0 | 22079 | S19 | W22 | 254 | ( B) | 4 | H | 90 | 4 | DSO |
| 81 | 02 | 19 | 17465 | S21 | W32 | 252 | 800 | 3.0 | | S17 | W38 | | | | B | 20 | 1 | HRX |
| 81 | 02 | 20 | 17465 | S21 | W44 | 250 | 1000 | 3.0 | 22079 | S19 | W53 | 258 | (AP) | 3 | B | 20 | 3 | CRO |
| 81 | 02 | 21 | 17465 | S20 | W62 | 253 | 900 | 3.5 | 22079 | S18 | W65 | 258 | (AP) | 2 | L | | 1 | AXX |

CONTD

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17465 (CONT) CMP DATE 17.2 NEW, IN LOCATION OF REGION 17408

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 22 | 17465 | S20 | W75 | 253 | 700 | 3.0 | | S19 | W69 | | | | H | 10 | 1 | AXX |
| 81 | 02 | 23 | 17465 | S22 | W80 | 245 | 300 | 2.5 | | | | | | | | | | |

HALE REGION 17464 CMP DATE 17.4

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 12 | 17464 | S08 | E58 | 252 | 100 | 2.0 | | | | | | | | | | |
| 81 | 02 | 13 | 17464 | S10 | E47 | 248 | 300 | 2.0 | | | | | | | | | | |
| 81 | 02 | 14 | 17464 | S10 | E34 | 249 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 15 | 17464 | S08 | E18 | 251 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 16 | 17464 | S07 | E07 | 251 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 17 | 17464 | S06 | W05 | 249 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 18 | 17464 | S06 | W18 | 249 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 19 | 17464 | S06 | W36 | 256 | 400 | 3.0 | | S04 | W36 | | | | B | 50 | 2 | DSO |
| 81 | 02 | 20 | 17464 | S06 | W51 | 257 | 600 | 3.5 | 22091 | S06 | W54 | 259 | ( B) | 4 | B | 110 | 11 | DSO |
| 81 | 02 | 21 | 17464 | S06 | W68 | 259 | 600 | 3.5 | 22091 | S06 | W67 | 260 | ( B) | 4 | H | 140 | 4 | DSO |
| 81 | 02 | 22 | 17464 | S06 | W79 | 257 | 400 | 3.5 | 22091 | S06 | W78 | 258 | ( B) | 2 | H | 40 | 3 | DSO |

HALE REGION 17463 CMP DATE 17.6 NEW, IN LOCATION OF SOUTH PART OF 17409

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 12 | 17463 | N08 | E67 | 243 | 1200 | 3.0 | | N13 | E73 | | | | B | 80 | 1 | HSX |
| 81 | 02 | 13 | 17463 | N06 | E53 | 242 | 1500 | 4.0 | | | | | | | | | | |
| 81 | 02 | 14 | 17463 | N06 | E39 | 244 | 1300 | 4.0 | | | | | | | | | | |
| 81 | 02 | 15 | 17463 | N09 | E25 | 244 | 1100 | 3.5 | 22086 | N12 | E26 | 246 | X | 2 | B | | 1 | AXX |
| 81 | 02 | 16 | 17463 | N11 | E12 | 246 | 1400 | 3.5 | 22086 | N12 | E13 | 246 | (BY) | 4 | H | 50 | 9 | CAO |
| 81 | 02 | 17 | 17463 | N11 | W03 | 247 | 1800 | 4.0 | 22086 | N12 | W02 | 248 | (BY) | 4 | H | 170 | 20 | DAO |
| 81 | 02 | 18 | 17463 | N12 | W15 | 246 | 1800 | 3.5 | 22086 | N12 | W16 | 248 | ( D) | 4 | H | 150 | 20 | DAI |
| 81 | 02 | 19 | 17463 | N12 | W27 | 247 | 1600 | 3.5 | | N12 | W28 | | | | B | 110 | 10 | DSO |
| 81 | 02 | 20 | 17463 | N10 | W42 | 248 | 1700 | 3.5 | 22086 | N12 | W42 | 247 | (BF) | 4 | B | 60 | 9 | EAO |
| 81 | 02 | 21 | 17463 | N11 | W55 | 246 | 1500 | 4.0 | 22086 | N12 | W60 | 253 | (BP) | 4 | H | 60 | 5 | CSO |
| 81 | 02 | 22 | 17463 | N12 | W68 | 246 | 1200 | 3.5 | 22086 | N11 | W79 | 259 | AP | 2 | H | 60 | 1 | HSX |
| 81 | 02 | 23 | 17463 | N12 | W80 | 245 | 400 | 3.0 | | N17 | W71 | | | | B | 40 | 1 | HSX |

HALE REGION 17467 CMP DATE 18.5 NEW, IN LOCATION OF REAR OF 17409

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 12 | 17467 | | | | | | 22082 | N14 | E75 | 237 | (AP) | 2 | H | 200 | 3 | DSO |
| 81 | 02 | 13 | 17467 | N12 | E62 | 233 | 1400 | 4.0 | 22082 | N15 | E60 | 238 | B | 4 | H | 40 | 6 | CSO |
| 81 | 02 | 14 | 17467 | N12 | E49 | 234 | 1800 | 4.0 | 22082 | N15 | E49 | 236 | BY | 5 | H | 160 | 8 | |
| 81 | 02 | 15 | 17467 | N14 | E34 | 235 | 1000 | 3.5 | 22082 | N15 | E35 | 237 | (BY) | 5 | B | 120 | 3 | CSO |
| 81 | 02 | 16 | 17467 | N14 | E22 | 236 | 900 | 3.5 | 22082 | N15 | E23 | 236 | ( D) | 5 | H | 190 | 6 | CHO |
| 81 | 02 | 17 | 17467 | N14 | E08 | 236 | 1500 | 3.0 | 22082 | N15 | E10 | 236 | (BP) | 5 | H | 150 | 5 | CHO |
| 81 | 02 | 18 | 17467 | N14 | W04 | 235 | 1000 | 3.0 | 22082 | N15 | W02 | 234 | (BP) | 5 | H | 150 | 4 | CSO |
| 81 | 02 | 19 | 17467 | N14 | W15 | 235 | 1100 | 3.0 | | N15 | W12 | | | | B | 150 | 3 | CKO |
| 81 | 02 | 20 | 17467 | N14 | W30 | 236 | 1300 | 3.0 | 22082 | N15 | W30 | 235 | (AP) | 4 | B | 150 | 3 | CSO |
| 81 | 02 | 21 | 17467 | N14 | W44 | 235 | 1100 | 3.0 | 22082 | N15 | W46 | 239 | (AP) | 4 | H | 160 | 1 | HSX |
| 81 | 02 | 22 | 17467 | N16 | W56 | 234 | 700 | 3.0 | 22082 | N15 | W58 | 238 | (AP) | 4 | H | 70 | 1 | HSX |
| 81 | 02 | 23 | 17467 | N15 | W68 | 233 | 500 | 3.0 | 22082 | N16 | W71 | 237 | (AP) | 4 | H | 60 | 1 | HSX |
| 81 | 02 | 24 | 17467 | | | | | | | N16 | W81 | | | | H | 60 | 1 | HSX |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17470 CMP DATE 18.7 RETURN OF REAR OF REGION 17408 ROTATION 2

| | | | | CALCIUM PLAGE DATA | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 13 | 17470 | S34 E66 | 229 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 14 | 17470 | S35 E52 | 231 | 300 | 3.0 | | | | | | | | | |
| 81 | 02 | 15 | 17470 | S32 E36 | 233 | 200 | 3.0 | | | | | | | | | |
| 81 | 02 | 16 | 17470 | S32 E27 | 231 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 17 | 17470 | S31 E13 | 231 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 18 | 17470 | S31 W01 | 232 | 200 | 3.0 | | | | | | | | | |
| 81 | 02 | 19 | 17470 | S31 W12 | 232 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 20 | 17470 | S31 W24 | 230 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 21 | 17470 | S31 W40 | 231 | 100 | 1.5 | | | | | | | | | |
| 81 | 02 | 22 | 17470 | S28 W52 | 230 | 200 | 1.5 | | | | | | | | | |

HALE REGION 17476 CMP DATE 19.3

| | | | | CALCIUM PLAGE DATA | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 18 | 17476 | S23 E07 | 224 | 100 | 2.0 | 22090 | S22 E09 | 223 | (AP) | 2 | | | | |
| 81 | 02 | 19 | 17476 | S23 W04 | 224 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 20 | 17476 | S23 W16 | 222 | 100 | 3.0 | | | | | | | | | |
| 81 | 02 | 21 | 17476 | S24 W33 | 224 | 100 | 2.5 | | | | | | | | | |
| 81 | 02 | 22 | 17476 | S23 W44 | 222 | 100 | 1.5 | | | | | | | | | |
| 81 | 02 | 23 | 17476 | S23 W61 | 226 | 100 | 2.5 | | | | | | | | | |

HALE REGION 17468 CMP DATE 19.5 RETURN OF NORTH PART OF REGION 17411 ROTATION 3

| | | | | CALCIUM PLAGE DATA | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 13 | 17468 | N22 E73 | 222 | 300 | 1.5 | | | | | | | | | |
| 81 | 02 | 14 | 17468 | N23 E62 | 221 | 300 | 2.5 | | | | | | | | | |
| 81 | 02 | 15 | 17468 | N24 E47 | 222 | 100 | 2.0 | | | | | | | | | |
| 81 | 02 | 16 | 17468 | N25 E35 | 223 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 17 | 17468 | N24 E23 | 221 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 18 | 17468 | N25 E13 | 218 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 19 | 17468 | N25 W02 | 222 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 20 | 17468 | N26 W13 | 219 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 21 | 17468 | N25 W28 | 219 | 100 | 2.0 | | | | | | | | | |
| 81 | 02 | 22 | 17468 | N25 W41 | 219 | 200 | 2.5 | | | | | | | | | |
| 81 | 02 | 23 | 17468 | N24 W53 | 218 | 100 | 2.5 | | | | | | | | | |

HALE REGION 17480 CMP DATE 21.0

| | | | | CALCIUM PLAGE DATA | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 21 | 17480 | S23 W10 | 201 | 100 | 3.0 | | | | | | | | | |
| 81 | 02 | 22 | 17480 | S23 W22 | 200 | 100 | 2.0 | | | | | | | | | |

HALE REGION 17469 CMP DATE 21.3 RETURN OF REGIONS 17413 AND 17417 ROTATIONS 3 AND 2

| | | | | CALCIUM PLAGE DATA | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 15 | 17469 | N10 E64 | 205 | 400 | 2.0 | | | | | | | | | |
| 81 | 02 | 16 | 17469 | N11 E52 | 206 | 600 | 2.5 | | | | | | | | | |
| 81 | 02 | 17 | 17469 | N10 E39 | 205 | 800 | 3.0 | | | | | | | | | |
| 81 | 02 | 18 | 17469 | N10 E30 | 201 | 800 | 3.0 | | | | | | | | | |
| 81 | 02 | 19 | 17469 | N10 E22 | 198 | 900 | 3.0 | | N08 E22 | | | | B | 40 | 6 | BXO |
| 81 | 02 | 20 | 17469 | N10 E08 | 198 | 1500 | 3.5 | 22092 | N11 E10 | 195 | ( D) | 4 | B | 140 | 30 | DAI |
| 81 | 02 | 21 | 17469 | N10 W07 | 198 | 1800 | 3.0 | 22092 | N12 W04 | 197 | ( B) | 5 | H | 580 | 18 | EKI |
| 81 | 02 | 22 | 17469 | N11 W19 | 197 | 2700 | 3.5 | 22092 | N12 W17 | 197 | ( B) | 5 | H | 860 | 25 | EKI |
| 81 | 02 | 23 | 17469 | N10 W34 | 199 | 3100 | 3.5 | 22092 | N12 W32 | 198 | ( D) | 5 | H | 1350 | 33 | EKC |
| 81 | 02 | 24 | 17469 | | | | | | N10 W43 | | | | H | 1300 | 21 | EKI |

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# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17469 (CONT) CMP DATE 21.3 RETURN OF REGIONS 17413 AND 17417 ROTATIONS 3 AND 2

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 25 | 17469 | | | | | | | N12 | W55 | | | | B | 1030 | 7 | EHO |
| 81 | 02 | 27 | 17469 | | | | | | 22092 | N09 | W85 | 199 | AF | 3 | B | 800 | 6 | DKI |

HALE REGION 17471 CMP DATE 21.9 RETURN OF REGION 17418 ROTATION 5

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 15 | 17471 | S12 | E70 | 199 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 16 | 17471 | S12 | E65 | 193 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 17 | 17471 | S12 | E53 | 191 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 18 | 17471 | S12 | E40 | 191 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 19 | 17471 | S12 | E30 | 190 | 300 | 2.5 | | | | | | | | | | |
| 81 | 02 | 20 | 17471 | S12 | E17 | 189 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 21 | 17471 | S12 | E02 | 189 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 22 | 17471 | S12 | W15 | 193 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 23 | 17471 | S12 | W27 | 192 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 27 | 17471 | S12 | W75 | 186 | 100 | 2.0 | | | | | | | | | | |

HALE REGION 17472 CMP DATE 21.9 RETURN OF SOUTHERN PART OF REGION 17414 ROTATION 3

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 15 | 17472 | S29 | E72 | 197 | 200 | 2.0 | | | | | | | | | | |
| 81 | 02 | 16 | 17472 | S27 | E58 | 200 | 500 | 2.5 | | | | | | | | | | |
| 81 | 02 | 17 | 17472 | S27 | E48 | 196 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 18 | 17472 | S28 | E39 | 192 | 800 | 3.0 | | | | | | | | | | |
| 81 | 02 | 19 | 17472 | S29 | E28 | 192 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 20 | 17472 | S29 | E15 | 191 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 21 | 17472 | S29 | E02 | 189 | 400 | 3.0 | | | | | | | | | | |
| 81 | 02 | 22 | 17472 | S29 | W12 | 190 | 500 | 2.5 | | | | | | | | | | |
| 81 | 02 | 23 | 17472 | S29 | W25 | 190 | 600 | 3.0 | | | | | | | | | | |

HALE REGION 17473 CMP DATE 22.0 RETURN OF NORTHERN PART OF REGION 17414 ROTATION 3

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 16 | 17473 | S17 | E69 | 189 | 300 | 2.5 | | | | | | | | | | |
| 81 | 02 | 17 | 17473 | S20 | E58 | 186 | 300 | 2.5 | | | | | | | | | | |
| 81 | 02 | 18 | 17473 | S18 | E44 | 187 | 300 | 3.0 | | | | | | | | | | |
| 81 | 02 | 19 | 17473 | S18 | E35 | 185 | 300 | 2.5 | | | | | | | | | | |
| 81 | 02 | 20 | 17473 | S18 | E18 | 188 | 300 | 3.0 | | | | | | | | | | |
| 81 | 02 | 21 | 17473 | S18 | E03 | 188 | 300 | 3.0 | | | | | | | | | | |
| 81 | 02 | 22 | 17473 | S18 | W10 | 188 | 400 | 2.5 | | | | | | | | | | |
| 81 | 02 | 23 | 17473 | S18 | W24 | 189 | 500 | 3.0 | | | | | | | | | | |
| 81 | 02 | 27 | 17473 | S18 | W80 | 191 | 200 | 3.0 | | | | | | | | | | |

HALE REGION 17475 CMP DATE 22.5

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT | CMD | L | AREA | INT | MW NO. | LAT | CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 17 | 17475 | N12 | E65 | 179 | 300 | 2.5 | 22089 | N10 | E70 | 176 | (AF) | 2 | H | 10 | 2 | BXO |
| 81 | 02 | 17 | 17475 | N12 | E65 | 179 | 300 | 2.5 | 22088 | N13 | E65 | 181 | (AP) | 2 | H | 10 | 2 | BXO |
| 81 | 02 | 18 | 17475 | N12 | E52 | 179 | 400 | 3.0 | 22089 | N10 | E60 | 172 | (AF) | 3 | H | 10 | 1 | AXX |
| 81 | 02 | 18 | 17475 | N12 | E52 | 179 | 400 | 3.0 | 22088 | N13 | E51 | 181 | (BP) | 4 | H | 20 | 2 | BXO |
| 81 | 02 | 19 | 17475 | N12 | E40 | 180 | 400 | 2.5 | | N13 | E37 | | | | B | 100 | 2 | CSO |
| 81 | 02 | 20 | 17475 | N12 | E25 | 181 | 500 | 3.0 | 22088 | N13 | E23 | 182 | (AP) | 4 | B | 70 | 2 | CSO |
| 81 | 02 | 21 | 17475 | N12 | E10 | 181 | 700 | 3.0 | 22088 | N13 | E09 | 184 | (AP) | 4 | H | 80 | 5 | CSO |
| 81 | 02 | 22 | 17475 | N13 | W03 | 181 | 600 | 3.0 | 22088 | N13 | W02 | 182 | (BP) | 4 | H | 80 | 7 | CSO |
| 81 | 02 | 23 | 17475 | N13 | W16 | 181 | 900 | 3.5 | 22088 | N13 | W16 | 182 | (BP) | 4 | H | 80 | 7 | DSO |

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# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17475 (CONT) CMP DATE 22.5

| | | | | CALCIUM PLAGE DATA | | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 24 | 17475 | | | | | | N12 W26 | | | | H | 60 | 4 | CSO |
| 81 | 02 | 26 | 17475 | | | | | | N12 W55 | | | | B | 50 | 1 | HSX |
| 81 | 02 | 27 | 17475 | N13 W76 | 187 | 300 | 3.0 | 22088 | N09 W72 | 186 | (AP) | 3 | B | 60 | 1 | HSX |

HALE REGION 17474 CMP DATE 23.0 RETURN OF REGION 17427 ROTATION 5

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 17 | 17474 | N17 E66 | 178 | 200 | 3.0 | | N12 E64 | | | | B | | 1 | AXX |
| 81 | 02 | 18 | 17474 | N17 E56 | 175 | 400 | 3.0 | | N12 E51 | | | | H | 20 | 2 | BXO |
| 81 | 02 | 19 | 17474 | N17 E43 | 177 | 400 | 3.0 | | N13 E37 | | | | B | 100 | 2 | CSO |
| 81 | 02 | 20 | 17474 | N19 E30 | 176 | 400 | 3.5 | | | | | | | | | |
| 81 | 02 | 21 | 17474 | N19 E14 | 177 | 600 | 3.0 | | N14 E08 | | | | B | 80 | 2 | CSO |
| 81 | 02 | 22 | 17474 | N19 E03 | 175 | 400 | 3.0 | | | | | | | | | |
| 81 | 02 | 23 | 17474 | N21 W13 | 178 | 500 | 3.0 | | | | | | | | | |
| 81 | 02 | 27 | 17474 | N21 W69 | 180 | 200 | 2.5 | | | | | | | | | |

HALE REGION 17477 CMP DATE 23.3

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 18 | 17477 | S14 E58 | 173 | 100 | 2.0 | | | | | | | | | |
| 81 | 02 | 19 | 17477 | S15 E48 | 172 | 100 | 2.0 | | | | | | | | | |

HALE REGION 17485 CMP DATE 25.0

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 27 | 17485 | S20 W38 | 149 | 100 | 3.0 | | | | | | | | | |

HALE REGION 17479 CMP DATE 26.1

| | | | | CALCIUM PLAGE DATA | | | | | SUNSPOT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 20 | 17479 | S15 E78 | 128 | 300 | 3.0 | 22093 | S17 E76 | 129 | ( B) | 4 | B | 140 | 4 | CAO |
| 81 | 02 | 21 | 17479 | S16 E61 | 130 | 600 | 3.5 | 22093 | S17 E61 | 132 | ( B) | 4 | H | 380 | 7 | DKC |
| 81 | 02 | 22 | 17479 | S16 E49 | 129 | 1200 | 3.5 | 22093 | S17 E49 | 131 | ( B) | 4 | H | 190 | 2 | DKI |
| 81 | 02 | 23 | 17479 | S16 E36 | 129 | 1100 | 3.5 | 22097 | S14 E41 | 125 | (AP) | 2 | H | 200 | 3 | DSO |
| 81 | 02 | 23 | 17479 | S16 E36 | 129 | 1100 | 3.5 | 22093 | S17 E34 | 132 | ( B) | 4 | H | 200 | 3 | DSO |
| 81 | 02 | 24 | 17479 | | | | | | S18 E23 | | | | H | 260 | 8 | DAO |
| 81 | 02 | 25 | 17479 | | | | | | S18 E09 | | | | B | 150 | 5 | DSO |
| 81 | 02 | 26 | 17479 | | | | | | S17 W05 | | | | B | 180 | 4 | DAO |
| 81 | 02 | 27 | 17479 | S16 W23 | 134 | 800 | 3.0 | 22093 | S19 W18 | 132 | (BY) | 4 | B | 170 | 16 | DAI |
| 81 | 02 | 28 | 17479 | | | | | | S14 W30 | | | | B | 140 | 9 | DSI |
| 81 | 03 | 2 | 17479 | | | | | | S12 W61 | | | | B | 80 | 3 | CSO |
| 81 | 03 | 3 | 17479 | S17 W72 | 129 | 300 | 2.5 | 22093 | S14 W76 | 137 | X | 2 | M | 110 | 1 | HSX |
| 81 | 03 | 4 | 17479 | | | | | | S14 W78 | | | | L | 30 | 1 | HSX |

# REGIONS OF SOLAR ACTIVITY

## FEBRUARY 1981

HALE REGION 17482 CMP DATE 26.1

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 23 | 17482 | N12 E22 | 143 | 200 | 3.0 | | | | | | | | | |

HALE REGION 17478 CMP DATE 26.4

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 20 | 17478 | N23 E75 | 131 | 200 | 3.0 | | | | | | | | | |
| 81 | 02 | 21 | 17478 | N22 E58 | 133 | 500 | 3.0 | | | | | | | | | |
| 81 | 02 | 22 | 17478 | N22 E45 | 133 | 500 | 3.0 | | | | | | | | | |
| 81 | 02 | 23 | 17478 | N23 E32 | 133 | 500 | 3.5 | | | | | | | | | |
| 81 | 02 | 27 | 17478 | N24 W20 | 131 | 400 | 3.0 | | | | | | | | | |
| 81 | 03 | 2 | 17478 | | | | | | N21 W49 | | | | B | 50 | 5 | CSO |
| 81 | 03 | 3 | 17478 | N20 W65 | 122 | 500 | 3.0 | 22103 | N20 W63 | 124 | X | 3 | M | 120 | 5 | CSO |
| 81 | 03 | 4 | 17478 | | | | | | N20 W75 | | | | H | 80 | 3 | DSO |

HALE REGION 17486 CMP DATE 28.0

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 25 | 17486 | | | | | | S06 E29 | | | | B | 30 | 3 | BXO |
| 81 | 02 | 26 | 17486 | | | | | | S06 E15 | | | | B | 40 | 4 | CSO |
| 81 | 02 | 27 | 17486 | S07 E02 | 109 | 500 | 3.0 | 22098 | S07 E02 | 112 | ( B) | 4 | B | 180 | 10 | DAO |
| 81 | 02 | 28 | 17486 | | | | | | S08 E11 | | | | M | 10 | 2 | AXX |
| 81 | 03 | 2 | 17486 | | | | | | S05 W37 | | | | B | 20 | 2 | CSO |
| 81 | 03 | 3 | 17486 | S08 W54 | 111 | 700 | 3.0 | | S07 W45 | | | | L | 10 | 2 | AXX |
| 81 | 03 | 5 | 17486 | S08 W75 | 107 | 300 | 3.0 | | | | | | | | | |

HALE REGION 17483 CMP DATE 28.9

| CALCIUM PLAGE DATA | | | | | | | | SUNSPOT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YR | MO | DA | HL NO. | LAT CMD | L | AREA | INT | MW NO. | LAT CMD | L | MAG. | H | STA | AREA | CNT | CLASS |
| 81 | 02 | 22 | 17483 | | | | | 22096 | N17 E88 | 92 | AP | 1 | | | | |
| 81 | 02 | 23 | 17483 | N17 E68 | 97 | 300 | 3.0 | 22096 | N16 E67 | 99 | (AP) | 2 | H | | 1 | AXX |
| 81 | 02 | 24 | 17483 | | | | | | N17 E52 | | | | H | | 1 | AXX |
| 81 | 02 | 25 | 17483 | | | | | | N15 E40 | | | | B | 60 | 5 | CRO |
| 81 | 02 | 26 | 17483 | | | | | | N18 E28 | | | | P | 80 | 10 | DSO |
| 81 | 02 | 27 | 17483 | N16 E13 | 98 | 700 | 3.0 | 22099 | N21 E12 | 102 | (BY) | 3 | B | 50 | 6 | CRO |
| 81 | 02 | 28 | 17483 | | | | | | N18 E02 | | | | B | 50 | 8 | CSI |
| 81 | 03 | 2 | 17483 | | | | | | N18 W24 | | | | B | 20 | 5 | CRO |
| 81 | 03 | 3 | 17483 | N16 W44 | 101 | 1100 | 3.5 | 22104 | N17 W37 | 98 | X | 3 | M | 90 | 3 | CSO |
| 81 | 03 | 4 | 17483 | | | | | | N17 W46 | | | | L | 10 | 2 | BXO |

# DAILY CALCIUM PLAGE INDEX

## FEBRUARY 1981

| YR | MO | DAY | INDEX | YR | MO | DAY | INDEX | YR | MO | DAY | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 2 | 1 | 48.3 | 81 | 2 | 11 | * | 81 | 2 | 21 | 25.0 |
| 81 | 2 | 2 | 47.4 | 81 | 2 | 12 | 38.6 | 81 | 2 | 22 | 25.5 |
| 81 | 2 | 3 | 44.1 | 81 | 2 | 13 | 45.7 | 81 | 2 | 23 | 27.9 |
| 81 | 2 | 4 | 48.7 | 81 | 2 | 14 | 47.2 | 81 | 2 | 24 | * |
| 81 | 2 | 5 | 39.5 | 81 | 2 | 15 | 38.8 | 81 | 2 | 25 | * |
| 81 | 2 | 6 | 36.3 | 81 | 2 | 16 | 31.7 | 81 | 2 | 26 | * |
| 81 | 2 | 7 | 34.1 | 81 | 2 | 17 | 35.5 | 81 | 2 | 27 | 34.0 |
| 81 | 2 | 8 | * | 81 | 2 | 18 | 34.8 | 81 | 2 | 28 | * |
| 81 | 2 | 9 | * | 81 | 2 | 19 | 26.4 | | | | |
| 81 | 2 | 10 | 38.8 | 81 | 2 | 20 | 26.7 | | | | |

* NO OBSERVATIONS

NOTE: NO CALCIUM SPECTROHELIOGRAMS WERE SECURED AT MT WILSON OBSERVATORY ON SEPTEMBER 5, 16, and 26, 1980.
NO SUNSPOT OBSERVATIONS WERE MADE AT MT WILSON OBSERVATORY ON SEPTEMBER 16-23, 1980.

CONTIGUOUS PLAGES FOR SEPTEMBER 1980: 17089 - 17100
17093 - 17134
17146 - 17160
17156 - 17163

# SUDDEN IONOSPHERIC DISTURBANCES

## FEBRUARY 1981

| | UNIVERSAL TIME | | | | WIDE SPREAD INDEX | NUMBER OF STATION REPORTS BY TYPE | | | | | | | KNOWN FLARE | HALE REGION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | START | END | MAX | IMP | | SWF | SCNA | SEA | SPA | LF-SPA | SES | SFD | | |
| 01 | 0001 | 0049 | 0006 | 1- | 3 | | | | 1 | | 1 | | NF | |
| 01 | 0305 | 0322 | 0310 | 1- | 1 | | | | 1 | | | | NF | |
| 01 | 0333 | 0426 | 0339 | 1- | 3 | 1 | | | 2 | | 1 | | 0333 | 17436 |
| 01 | 0556 | 0716 | 0610 | 1 | 3 | | | | 2 | | 1 | | 0555 | 17439 |
| 01 | 1845 | 1930 | 1856 | 1 | 3 | | | | | | 10 | | 1845 | 17436 |
| 02 | 1518 | 1548D | 1548 | 1- | 1 | | | | 1 | | | | 1510 | 17429 |
| 02 | 1715 | 1806 | 1724 | 1- | 5 | 1 | | | 1 | | 15 | | 1709 | 17436 |
| 02 | 1824 | 1900 | 1840 | 1 | 3 | | | | | | 10 | | * | |
| 03 | 0107 | 0215 | 0116 | 1- | 3 | 1 | | | 2 | | | | 0105 | 17436 |
| 03 | 0321 | 0345 | 0326 | 1- | 1 | | | | 1 | | | | 0320 | 17436 |
| 03 | 0425 | 0518 | 0438 | 1- | 3 | | | | 2 | | | | 0421 | 17448 |
| 03 | 0545 | 0636 | 0600 | 1- | 3 | | | | 2 | | | | 0543 | 17443 |
| 03 | 1806 | 2012 | 1825 | 1- | 5 | 1 | | | 1 | | 9 | | NF | |
| 04 | 0056 | 0230 | 0126 | 1 | 3 | | | | 1 | | 3 | | * | |
| 04 | 0118 | 0203 | 0132 | 1- | 3 | 1 | | | 1 | | 1 | | 0116 | 17436 |
| 04 | 1626 | 1645 | 1632 | 1 | 3 | | | | | | 5 | | 1625 | 17448 |
| 04 | 2354 | 0127 | 0013 | 1 | 5 | 1 | | | 2 | | 3 | | * | |
| 05 | 0127 | 0216 | 0142 | 1- | 5 | 1 | | | 2 | | 3 | | * | |
| 05 | 0438 | 0500 | 0445 | 1- | 1 | | | | 1 | | | | * | |
| 05 | 1050 | 1127 | 1056 | 1- | 3 | | | 2 | 1 | | 1 | | * | |
| 05 | 2116 | 2204 | 2128 | 1 | 5 | 1 | | 1 | | | 10 | | * | |
| 05 | 2225 | 000[illegible] | 2242 | 1 | 5 | 1 | | | 1 | | 4 | | 2227 | 17428 |
| 05 | 2240 | 2310 | 2247 | 1 | 3 | 1 | | | | | 3 | | * | |
| 06 | 0028 | 0157 | 0047 | 1 | 5 | 1 | | | 2 | | 3 | | NF | |
| 06 | 0412 | 0430 | 0417 | 1- | 1 | | | | 1 | | | | 0411 | 17438 |
| 06 | 0755 | 0845 | 0809 | 2 | 3 | | | | | | 2 | | 0757E | 17438 |
| 06 | 1225 | 1248D | 1248 | 1- | 3 | | | | 2 | | | | NF | |
| 06 | 1330 | 1337D | 1337 | 1- | 3 | | | | 1 | | 2 | | 1330 | 17438 |
| 06 | 1357 | 1415 | 1405 | 1- | 3 | | | 1 | 1 | | 7 | | 1354 | 17438 |
| 06 | 1548 | 1554D | 1554 | 1- | 3 | | | | 1 | | 5 | | 1549 | 17438 |
| 06 | 1624 | 1630D | 1630 | 1- | 3 | | | | 1 | | 14 | | * | |
| 06 | 1708 | 1830 | 1730 | 1 | 3 | | | | | | 7 | | * | |
| 06 | 1756 | 1820 | 1800 | 2 | 3 | | | | | | 14 | | * | |
| 06 | 1858 | 1920D | 1902 | 1 | 3 | | | | | | 4 | | * | |
| 06 | 1920 | 2000 | 1935 | 1- | 3 | | | | | | 2 | | * | |
| 06 | 2123 | 2200D | 2129 | 2 | 5 | 1 | | | 1 | | 11 | | * | |
| 06 | 2200E | 2302 | 2206 | 1- | 3 | | | | 1 | | 4 | | * | |
| 07 | 0028E | 0056 | 0030 | 1- | 3 | 1 | | | 1 | | | | NF | |
| 07 | 0332E | 0402 | 0336 | 1 | 5 | 2 | | | 2 | | 5 | | 0332 | 17438 |
| 07 | 0426 | 0458D | 0440 | 1- | 1 | | | | 1 | | | | 0433 | 17438 |
| 07 | 0455E | 0528 | 0505 | 1- | 1 | | | | 1 | | | | 0453 | 17454 |
| 07 | 0732 | 0800 | 0736 | 1- | 1 | | | | 1 | | | | 0732 | 17454 |
| 07 | 1242 | 1248D | 1248 | 1- | 1 | | | 1 | 1 | | | | NF | |
| 07 | 1349 | 1352D | 1352 | 1 | 5 | 1 | | 3 | | | 10 | | 1345 | 17438 |
| 07 | 1354 | 1355D | 1355 | 1 | 5 | 1 | | 1 | | | 2 | | 1355 | 17438 |
| 07 | 1535 | 1548D | 1540 | 1 | 5 | | | | 1 | | 6 | | 1535 | 17438 |
| 07 | 1551 | 1600D | 1600 | 1- | 3 | | | | 1 | | 4 | | 1550 | 17454 |
| 07 | 1644 | 1720 | 1648 | 2 | 5 | | | | 1 | | 18 | | 1641 | 17454 |
| 07 | 1759 | 1820 | 1802 | 1- | 5 | | | | 1 | | 15 | | * | |
| 07 | 1831 | 1920 | 1840 | 1- | 5 | | | | 2 | | 16 | | * | |
| 07 | 2104 | 2148 | 2107 | 1- | 5 | | | | 1 | | 13 | | * | |
| 07 | 2217 | 2309D | 2234 | 2+ | 5 | 2 | | | 1 | | 10 | | NF | |
| 07 | 2308E | 2330 | 2314 | 1- | 3 | | | | 1 | | 4 | | NF | |
| 08 | 0131E | 0248 | 0144 | 2+ | 3 | 1 | | | 1 | | 3 | | 0132 | 17454 |
| 08 | 0328 | 0421D | 0334 | 2+ | 5 | 1 | | | 2 | | 5 | | 0328 | 17454 |
| 08 | 0421E | 0510 | 0424 | 1 | 3 | | | | 1 | | 3 | | * | |
| 08 | 0554 | 0636 | 0601 | 1- | 1 | | | | 1 | | | | 0557 | No data |
| 08 | 0653 | 0802 | 0702 | 1- | 3 | | | | 2 | | 1 | | 0654 | No data |
| 08 | 1040 | 1102 | 1044 | 1- | 3 | | | 2 | | | | | 1045 | No data |
| 08 | 1352 | 1400D | 1400 | 1- | 3 | | | | 1 | | 4 | | 1350 | No data |
| 08 | 1418 | 1454 | 1421 | 1 | 1 | | | | 1 | | | | * | |
| 08 | 1703 | 1807D | 1732 | 3 | 3 | | | | | | 6 | | * | |
| 08 | 1804 | 1845 | 1812 | 2+ | 3 | 1 | | | | | 15 | | * | |
| 08 | 2230 | 0000 | 2258 | 2 | 3 | | | | | | 3 | | * | |

# SUDDEN IONOSPHERIC DISTURBANCES

## FEBRUARY 1981

| DAY | UNIVERSAL TIME START | END | MAX | IMP | WIDE SPREAD INDEX | NUMBER OF STATION REPORTS BY TYPE SWF | SCNA | SEA | SPA | LF-SPA | SES | SFD | KNOWN FLARE | HALE REGION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09 | 1236 | 0255 | 0240 | 1- | 3 | 1 | | | | | 2 | | NF | |
| 09 | 0403 | 0432D | 0409 | 1- | 1 | | | | | | 1 | | NF | |
| 09 | 0644 | 0838 | 0656 | 2+ | 3 | | | | 2 | | 4 | | 0639 | 17460 |
| 09 | 1001 | 1030 | 1006 | 1- | 3 | | | | 1 | | 1 | | 1001 | 17460 |
| 09 | 1237 | 1307 | 1242 | 1 | 1 | | | 1 | | | | | 1234 | 17454 |
| 09 | 1333 | 1445 | 1348 | 1- | 1 | | | | 1 | | | | NF | |
| 09 | 1503 | 1508D | 1508 | 1- | 1 | | | 1 | 1 | | | | 1506 | No data |
| 09 | 1547 | 1600 | 1558 | 1 | 3 | | | | 1 | | 7 | | 1548 | No data |
| 09 | 1652 | 1736 | 1658 | 1- | 3 | | | | 1 | | 10 | | * | |
| 09 | 1726 | 1745 | 1730 | 1 | 3 | | | | | | 4 | | * | |
| 10 | 0039 | 0057 | 0044 | 1- | 1 | 1 | | | | | | | 0037 | 17454 |
| 10 | 0138 | 0203D | 0144 | 1- | 3 | 1 | | | 2 | | | | NF | |
| 10 | 0203E | 0252D | 0207 | 1 | 3 | 1 | | | 1 | | 3 | | NF | |
| 10 | 0223 | 0240 | 0226 | 1- | 3 | | | | | | 2 | | 0222 | 17448 |
| 10 | 0316 | 0324D | 0324 | 2 | 5 | 2 | | | 1 | | 4 | | 0319 | 17438 |
| 10 | 0602 | 0640 | 0630 | 1- | 3 | | | | 2 | | 1 | | NF | |
| 10 | 1029 | 1143 | 1038 | 2 | 5 | 2 | | 2 | 1 | | 1 | | 1030 | 17454 |
| 10 | 1718 | 1833 | 1724 | 1- | 3 | | | | 1 | | 9 | | NF | |
| 10 | 1831 | 1845 | 1833 | 1- | 3 | | | | | | 2 | | 1825 | 17448 |
| 10 | 1952 | 2116 | 1957 | 1- | 3 | | | | 1 | | 3 | | 1948 | 17454 |
| 11 | 0119 | 0219 | 0137 | 1 | 3 | 1 | | | 1 | | | | NF | |
| 11 | 0242 | 0320 | 0250 | 1- | 3 | | | | 2 | | | | NF | |
| 11 | 0340 | 0442 | 0403 | 1 | 3 | | | | 2 | | 3 | | 0346 | 17454 |
| 11 | 0935 | 1012 | 0947 | 1- | 3 | | | | 1 | | 1 | | 0933 | 17454 |
| 11 | 1616 | 1812 | 1633 | 1- | 3 | | | | 1 | | 9 | | 1615 | No data |
| 11 | 1747 | 1815 | 1752 | 1+ | 3 | | | | | | 5 | | 1747 | No data |
| 11 | 2144 | 2234 | 2203 | 1- | 1 | | | | 1 | | | | NF | |
| 11 | 2255 | 2342 | 2259 | 2 | 3 | 1 | | | 2 | | 5 | | 2300E | No data |
| 12 | 0121 | 0140 | 0123 | 1 | 3 | 1 | | | 2 | | 3 | | 0121E | 17448 |
| 12 | 0327 | 0356 | 0334 | 1- | 1 | | | | 1 | | | | 0327 | 17462 |
| 12 | 0433 | 0514 | 0438 | 1 | 3 | 1 | | | 2 | | | | 0433 | 17448 |
| 12 | 0608 | 0730 | 0629 | 1- | 3 | | | | 2 | | | | NF | |
| 12 | 0928 | 1048D | 1001 | 1- | 3 | | | | 2 | | | | 0929 | 17454 |
| 12 | 1247 | 1406 | 1251 | 1 | 5 | 1 | | 3 | 1 | | 1 | | 1242 | 17454 |
| 12 | 1530 | 1712 | 1541 | 1- | 3 | | | | 1 | | 12 | | 1522 | 17454 |
| 12 | 1737 | 1742D | 1742 | 1- | 3 | | | | 1 | | 10 | | NF | |
| 12 | 1812 | 1906 | 1820 | 1- | 1 | | | | 1 | | | | 1814 | 17454 |
| 12 | 2005 | 2115 | 2010 | 1- | 3 | | | | 1 | | 12 | | 2002 | 17463 |
| 13 | 0037 | 0153 | 0048 | 1 | 3 | 1 | | | 2 | | 3 | | 0037 | 17454 |
| 13 | 0308 | 0344 | 0314 | 1- | 3 | 1 | | | 2 | | | | 0314 | 17454 |
| 13 | 0343 | 0408 | 0348 | 1- | 1 | | | | 1 | | | | 0345 | 17454 |
| 13 | 0410 | 0515 | 0421 | 2+ | 3 | 2 | | | 2 | | 4 | | 0408 | 17460 |
| 13 | 0615 | 0722 | 0626 | 2+ | 3 | 2 | | | 2 | | 4 | | 0615 | 17467 |
| 13 | 0751E | 0848D | 0800 | 1 | 3 | | | | 1 | | 14 | | 0755 | 17467 |
| 13 | 1409 | 1424D | 1424 | 1- | 5 | | | 2 | 1 | | 8 | | 1406 | 17467 |
| 13 | 1654 | 1724 | 1700 | 1- | 3 | | | | 1 | | 11 | | NF | |
| 13 | 1933 | 2024 | 1945 | 1 | 3 | 1 | | | 1 | | 14 | | 1932 | 17454 |
| 13 | 2159 | 2235 | 2222 | 1- | 3 | | | | 1 | | 3 | | 2152 | 17467 |
| 14 | 0753 | 0915 | 0812 | 2 | 3 | 1 | | 1 | 1 | | 1 | | 0752 | 17461 |
| 14 | 1608 | 1625 | 1610 | 1- | 3 | | | | | | 2 | | 1603 | 17464 |
| 14 | 1824 | 1954 | 1834 | 1- | 3 | 1 | | | 1 | | 17 | | * | |
| 15 | 0051 | 0125D | 0058 | 1- | 3 | 1 | | | 2 | | 2 | | * | |
| 15 | 0124 | 0200 | 0132 | 1- | 1 | | | | 1 | | | | * | |
| 15 | 1420 | 1603 | 1439 | 1- | 1 | | | | 1 | | | | 1415 | 17462 |
| 15 | 1900 | 1951 | 1906 | 1- | 3 | 2 | | | 1 | | 20 | | 1854 | 17469 |
| 15 | 1939 | 1955 | 1942 | 1- | 3 | | | | | | 11 | | 1938 | 17467 |
| 15 | 2111 | 2241 | 2115 | 1 | 3 | | | | 1 | | 14 | | 2112 | 17467 |
| 16 | 0036 | 0054 | 0046 | 1- | 3 | 1 | | | 1 | | | | 0039 | 17454 |
| 16 | 0238 | 0303 | 0242 | 1- | 3 | 1 | | | 1 | | | | 0240 | 17454 |
| 16 | 0543 | 0636 | 0553 | 1- | 1 | | | | 1 | | | | 0547 | 17454 |
| 16 | 1436 | 1548 | 1446 | 1- | 1 | | | 1 | 1 | | | | 1435E | 17461 |
| 16 | 1719 | 1739D | 1730 | 1- | 3 | | | | 1 | | 16 | | 1715 | 17462 |
| 16 | 1736 | 1800 | 1738 | 1 | 3 | | | | 16 | | | | 1735 | 17461 |

# SUDDEN IONOSPHERIC DISTURBANCES

## FEBRUARY 1981

| DAY | UNIVERSAL TIME START | END | MAX | IMP | WIDE SPREAD INDEX | NUMBER OF STATION REPORTS BY TYPE SWF | SCNA | SEA | SPA | LF-SPA | SES | SFD | KNOWN FLARE | HALE REGION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 0213 | 0239 | 0216 | 1- | 3 | 2 | | | | | | | 0217E | 17467 |
| 17 | 0410 | 0438 | 0417 | 1- | 1 | 1 | | | | | | | 0411 | 17467 |
| 17 | 0539 | 0602D | 0548 | 1- | 1 | | | | 1 | | | | 0544 | 17463 |
| 17 | 1320 | 1444 | 1338 | 1- | 1 | | | | 1 | | | | 1322E | 17463 |
| 17 | 1846 | 1903D | 1850 | 1- | 3 | 1 | | | 1 | | 10 | | 1850 | 17463 |
| 17 | 1910 | 2103 | 1921 | 1- | 3 | 1 | | | 1 | | 10 | | NF | |
| 17 | 2144 | 2333 | 2155 | 3 | 5 | 3 | | | 1 | | 11 | | 2146 | 17461 |
| 18 | 0128 | 0250 | 0157 | 1- | 3 | | | | 2 | | | | 0128 | 17461 |
| 18 | 0612 | 0630 | 0616 | 1+ | 3 | | | | | | 3 | | 0610 | 17461 |
| 18 | 1515 | 1536 | 1524 | 1- | 3 | | | | 1 | | 2 | | * | |
| 18 | 1642 | 1652 | 1645 | 1- | 3 | | | | 1 | | 18 | | 1640E | 17461 |
| 18 | 2235 | 2305 | 2243 | 1- | 3 | | | | 1 | | 1 | | 2235 | 17461 |
| 19 | 0143 | 0200 | 0148 | 1- | 1 | | | | 1 | | | | 0140 | 17461 |
| 19 | 0246 | 0733D | 0348 | 2+ | 5 | 2 | | | 2 | | 3 | | 0240E | 17461 |
| 19 | 0331E | 0830 | 0350 | 2+ | 3 | 1 | | | 1 | | 4 | | NF | |
| 19 | 1047 | 1218 | 1055 | 1 | 5 | 2 | | 3 | 1 | | 1 | | * | |
| 19 | 1421 | 1520 | 1427 | 1- | 3 | | | | 1 | | 2 | | NF | |
| 19 | 1528 | 1557 | 1534 | 1- | 3 | | | | 1 | | 1 | | 1526 | 17463 |
| 19 | 1758 | 1830 | 1805 | 1- | 1 | | | | | | 1 | | 1758 | 17463 |
| 19 | 1845 | 1900 | 1850 | 1- | 3 | 1 | | | | | 3 | | 1846 | 17463 |
| 19 | 2137 | 2155 | 2141 | 1- | 3 | | | | 1 | | 5 | | 2138 | 17463 |
| 20 | 0020 | 0123D | 0037 | 1 | 3 | 1 | | | 2 | | 2 | | 0032E | 17461 |
| 20 | 0123E | 0202 | 0133 | 1- | 3 | 1 | | | 1 | | | | 0128 | 17467 |
| 20 | 0336 | 0415 | 0344 | 1- | 3 | 2 | | | 2 | | 4 | | 0336 | 17469 |
| 20 | 0438 | 0518 | 0448 | 1- | 1 | | | | 1 | | 1 | | NF | |
| 20 | 0550 | 0650D | 0650 | 2+ | 5 | 1 | | | 2 | | 3 | | 0548 | 17463 |
| 20 | 0639E | 0911 | 0648 | 3 | 5 | 2 | | 3 | 1 | | 4 | | 0640 | 17463 |
| 20 | 1430 | 1733 | 1512 | 1- | 3 | | | | 1 | | 9 | | * | |
| 20 | 1820 | 1850 | 1826 | 1+ | 3 | | | | | | 3 | | 1823 | 17469 |
| 20 | 1933 | 2040 | 1946 | 1 | 3 | | | | 1 | | 1 | | * | |
| 20 | 2008 | 2026 | 2015 | 1- | 5 | | | | 1 | | 14 | | 2010 | 17478 |
| 20 | 2236 | 2252 | 2242 | 1- | 1 | | | | 1 | | | | 2233 | 17463 |
| 20 | 2301 | 2320 | 2305 | 1- | 3 | 1 | | | 1 | | 2 | | 2302 | 17461 |
| 21 | 1702 | 1722 | 1708 | 2+ | 3 | 3 | | | | | 17 | | 1704E | 17462 |
| 21 | 1902 | 1925 | 1906 | 1- | 3 | | | | | | 15 | | 1902 | 17463 |
| 21 | 2002 | 2015 | 2006 | 2 | 3 | 1 | | | | | 16 | | 2000 | 17469 |
| 21 | 2219 | 2252 | 2231 | 1- | 1 | | | | 1 | | | | 2220 | 17469 |
| 22 | 0110 | 0142 | 0114 | 1- | 1 | | | | 1 | | | | 0113 | 17469 |
| 22 | 0150 | 0230 | 0203 | 1- | 1 | | | | 1 | | | | 0151 | 17469 |
| 22 | 0245 | 0358D | 0255 | 2+ | 3 | 2 | | | 2 | | 3 | | 0247 | 17461 |
| 22 | 1553 | 1612 | 1534 | 1 | 3 | 1 | | | | | 11 | | NF | |
| 22 | 1834 | 1855 | 1845 | 1- | 3 | | | | | | 5 | | NF | |
| 22 | 1900 | 1930 | 1909 | 1+ | 3 | | | | | | 7 | | 1900 | 17479 |
| 22 | 2113 | 2140D | 2136 | 1+ | 3 | | | | | | 9 | | * | |
| 22 | 2200 | 2232 | 2207 | 1- | 3 | | | | 1 | | 4 | | NF | |
| 22 | 2330 | 0000 | 2347 | 1 | 3 | | | | | | 3 | | NF | |
| 23 | 0026 | 0111 | 0033 | 1- | 1 | | | | 1 | | | | 0025 | 17469 |
| 23 | 0240 | 0255D | 0248 | 1- | 3 | 1 | | | 1 | | | | 0245 | 17469 |
| 23 | 0357 | 0418 | 0408 | 1- | 1 | | | | 1 | | | | 0352 | 17475 |
| 23 | 0420 | 0452 | 0455 | 1- | 1 | | | | 1 | | | | 0420 | 17484 |
| 23 | 0545 | 0651 | 0557 | 3 | 3 | 2 | | | 1 | | | | * | |
| 23 | 0651 | 0858 | 0707 | 2+ | 3 | | | | 1 | | 1 | | * | |
| 23 | 1833 | 1915 | 1840 | 1- | 3 | | | | | | 5 | | * | |
| 23 | 2027 | 2122D | 2044 | 2+ | 3 | 1 | | | | | 13 | | 2025 | 17469 |
| 23 | 2157 | 2215 | 2205 | 1- | 1 | | | | 1 | | | | 2159 | 17481 |
| 24 | 0009 | 0230 | 0020 | 3 | 5 | 3 | | | 2 | | 6 | | 0010E | 17484 |
| 24 | 0629 | 0751 | 0642 | 1 | 3 | | | | 2 | | 1 | | 0626 | 17484 |
| 24 | 0756 | 0908 | 0808 | 2 | 3 | | | | 1 | | 4 | | 0759 | No data |
| 24 | 0828 | 0910 | 0837 | 2 | 3 | | | | | | 3 | | 0823 | 17479 |
| 24 | 1051 | 1157 | 1111 | 1- | 3 | | | 2 | 1 | | 1 | | 1054 | No data |
| 24 | 1205 | 1322 | 1228 | 2 | 5 | 2 | | 3 | 1 | | 1 | | * | |
| 24 | 1755 | 1809 | 1801 | 1 | 3 | | | | | | 9 | | 1754 | No data |
| 24 | 1815 | 1840 | 1828 | 2 | 3 | 1 | | | | | 14 | | 1801 | No data |
| 24 | 1821 | 1915 | 1831 | 1- | 3 | | | | | | 8 | | 1822 | 17469 |
| 24 | 1933 | 2020 | 1944 | 2+ | 5 | 4 | | | 1 | | 16 | | 1932 | No data |
| 24 | 2036 | 2124 | 2050 | 1- | 3 | | | | 1 | | 10 | | NF | |
| 24 | 2130 | 2145 | 2132 | 1- | 3 | | | | 1 | | 5 | | NF | |
| 24 | 2300 | 2341 | 2305 | 1- | 3 | 1 | | | 1 | | 5 | | 2301E | No data |

# SUDDEN IONOSPHERIC DISTURBANCES

## FEBRUARY 1981

| DAY | UNIVERSAL TIME START | END | MAX | IMP | WIDE SPREAD INDEX | NUMBER OF STATION REPORTS BY TYPE SWF | SCNA | SEA | SPA | LF-SPA | SES | SFD | KNOWN FLARE | HALE REGION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 0204 | 0406 | 0250 | 2 | 3 | | | | 2 | | 3 | | 0206E | No data |
| 25 | 0238 | 0354 | 0251 | 2+ | 3 | 2 | | | 1 | | 4 | | 0236 | No data |
| 25 | 0706 | 0752 | 0713 | 1- | 1 | | | | 1 | | | | 0706 | No data |
| 25 | 1550 | 1630 | 1602 | 1- | 3 | | | | 1 | | 11 | | NF | |
| 25 | 1754 | 1820 | 1804 | 1 | 3 | | | | | | 13 | | * | |
| 25 | 1820 | 1840 | 1828 | 1- | 3 | | | | | | 6 | | * | |
| 25 | 1938 | 2030 | 1944 | 1- | 3 | | | | | | 5 | | NF | |
| 26 | 0346 | 0420 | 0355 | 1- | 3 | | | | 2 | | | | NF | |
| 26 | 1311 | 1340 | 1315 | 1- | 3 | | | 1 | 1 | | 2 | | NF | |
| 26 | 1425 | 1450 | 1430 | 2 | 5 | 3 | | 3 | | | 13 | | 1424 | No data |
| 26 | 1639 | 1715 | 1647 | 1+ | 3 | | | | | | 10 | | * | |
| 26 | 1833 | 1935 | 1850 | 1 | 3 | 1 | | | 1 | | 11 | | 1832 | No data |
| 26 | 1949 | 2017 | 1954 | 2 | 3 | 4 | | | 1 | | 11 | | 1947 | No data |
| 26 | 2328 | 0016 | 2333 | 1+ | 3 | | | | 2 | | 6 | | NF | |
| 27 | 0028 | 0052 | 0034 | 1- | 1 | | | | 1 | | | | 0029 | 17481 |
| 27 | 0111 | 01330 | 0125 | 1- | 1 | | | | 1 | | | | NF | |
| 27 | 0133E | 0300 | 0139 | 2 | 3 | 2 | | | 1 | | 5 | | 0133 | 17491 |
| 27 | 0458 | 0534 | 0501 | 1- | 3 | | | | 2 | | | | 0458 | 17491 |
| 27 | 0539 | 0616 | 0547 | 1- | 1 | | | | 1 | | | | 0540 | 17487 |
| 27 | 0728 | 0805 | 0736 | 1+ | 1 | | | | | | 1 | | 0729 | 17492 |
| 27 | 1504 | 1544D | 1516 | 1 | 3 | | | | | | 4 | | * | |
| 27 | 1544 | 1630 | 1604 | 1+ | 3 | | | | | | 3 | | * | |
| 27 | 1732 | 1815 | 1749 | 1+ | 3 | | | | | | 3 | | NF | |
| 27 | 1957 | 2115 | 2019 | 2+ | 3 | | | | | | 9 | | 1956 | 17479 |
| 27 | 2304 | 00390 | 2332 | 2 | 3 | 2 | | | 1 | | | | 2302E | 17491 |
| 28 | 0039E | 0155 | 0043 | 1- | 3 | | | | 2 | | 3 | | 0037 | 17492 |
| 28 | 0609E | 0654 | 0632 | 1- | 3 | | | | 2 | | | | 0607 | 17491 |

PERIODS OF NO OBSERVATIONS:

| DATE | TIME (UT) AND STATION |
|---|---|
| 01 | 0000-2400 A52, A53 |
| 02 | 0000-2400 A52, A53 |
| | 1130-1320 Sao Paulo (UM) |
| 03 | 0000-2400 A26, A29, A48, A52, A53 |
| | 1048-1342 Sao Paulo (UM) |
| 04 | 1254-1624 Sao Paulo (UM) |
| | 0000-2400 A52, A53 |
| 05 | 0000-2400 A52, A53 |
| | 0000-1100 Sao Paulo (UM) |
| 06 | 0000-2400 A52, A53 |
| | 03540D942 Sao Paulo (UM) |
| 07 | 0000-2400 A52, A53 |
| 08 | 0000-2400 A53 |
| 09 | 0000-2400 A53 |
| | 1154-1237 Sao Paulo (UM) |
| 10 | 0000-2400 A26, A29, A48, A51, A53 |
| | 100402400 Sao Paulo (UM) |
| 11 | 0000-2400 A53 |
| | 0204-0409 Glenorchy (GN) |
| 12 | 0000-2400 A53 |
| 13 | 1148-2400 Sao Paulo (UM) |
| 14 | 0817-0838 Sao Paulo (UM) |
| 15 | 0000-2400 A53 |
| | 1127-1148 Sao Paulo (UM) |
| 16 | 1914-2400 Sao Paulo (UM) |
| 17 | 0000-2400 A26, A29, A48, A51 |
| 20 | 1831-1948 Sao Paulo (UM) |
| 24 | 0000-2400 A27, A28, A48, A51 |
| 27 | 0000-2400 A26 |
| 28 | 0000-2400 A49, A52 |

STATIONS REPORTING FOR FEBRUARY 1981:

| | | | |
|---|---|---|---|
| Agassiz Station, Massachusetts, USA (AS3) | SES | Louisville, Kentucky, USA (A26) | SES |
| Bedfordview, Transvaal, South Africa (AS2) | SES | Mahwah, New Jersey, USA (A5) | SES |
| Cleveland, Ohio, USA (A28) | SES | Maui, Hawaii, USA (MI) | SWF |
| Darmstadt, GFR (DA) | SWF | Missoula, Montana, USA (A31) | SES, SWF |
| Durham, North Carolina, USA (A54) | SES | Panska Ves, Czechoslovakia (PU) | SEA, SWF |
| Eugene, Oregon, USA (A57) | SES | Paterson, New Jersey, USA (A46) | SES |
| Eureka, Montana, USA (A55) | SES | Portage, Michigan, USA (A51) | SES |
| Fort Riley, Kansas, USA (A41) | SES | Saint Cloud, Minnesota, USA (SC) | SES |
| Frenchtown, Montana, USA (A56) | SES | Sao Paulo, Brasil (UM) | SEA, SPA, SES |
| Glenorchy, Tasmania, Australia (GN) | SWF | Sofia, Bulgaria (SF) | SEA |
| Hiraiso, Japan (HI) | SWF | Tavaris, Florida, USA (A49) | SES |
| Hobart, Tasmania, Australia (HO) | SEA | Thornwood, New York, USA (A48) | SES |
| Houston, Texas, USA (A50) | SES | Trenton, New Jersey, USA (NJ) | SES |
| Huancayo, Peru (HU) | SWF | Upice, Czechoslovakia (UI) | SEA |
| Inubo, Japan (IR) | SPA | Valley Cottage, New York, USA (A1) | SES |
| Kasugai, Japan (KA) | SPA | Vsetin, Czechoslovakia (VS) | SEA |
| Lake Hiawatha, New Jersey, USA (A32) | SES | Yakima, Washington, USA (A37) | SES |
| Latrobe, Pennsylvania, USA (A19) | SES | Zilina, Czechoslovakia (ZL) | SEA |

## SIDs BY HALE REGION

FEBRUARY 1981

| Region | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17428 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17429 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17436 | 2 | 1 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17438 | | | | | | 5 | 5 | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 17439 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17443 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17448 | | 1 | 1 | | | | | | | 2 | | 2 | | | | | | | | | | | | | | | | | | | |
| 17454 | | | | | | | 4 | 2 | 1 | 2 | 2 | 3 | 4 | | | 3 | | | | | | | | | | | | | | | |
| 17460 | | | | | | | | | 2 | | | | 1 | | | | | | | | | | | | | | | | | | |
| 17461 | | | | | | | | | | | | | | 1 | | | 1 | 4 | 2 | 2 | | 1 | | | | | | | | | |
| 17462 | | | | | | | | | | | | 1 | | | 1 | | | | | | 1 | | | | | | | | | | |
| 17463 | | | | | | | | | | | | | | | | | 3 | | 4 | 3 | 1 | | | | | | | | | | |
| 17464 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 17467 | | | | | | | | | | | | | 4 | | 2 | 2 | 2 | | | 1 | | | | | | | | | | | |
| 17469 | | | | | | | | | | | | | | | 1 | 1 | | | | 2 | 2 | 2 | 3 | 1 | | | | | | | |
| 17475 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 17478 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 17479 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | | | | |
| 17481 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | |
| 17484 | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | | | | | | | |
| 17487 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 17491 | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 1 | | | |
| 17492 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | |
| NO FLARE | 2 | 1 | | | | | 4 | | 3 | 3 | | 2 | 1 | | | | 1 | | 2 | 1 | | 4 | | 2 | 2 | 3 | 2 | | | | |
| NO FLARE PATROL | | 1 | | 2 | 5 | 7 | 3 | 5 | 2 | | 3 | | | 1 | 2 | | | | 1 | 1 | | 1 | 3 | 1 | 2 | 1 | 2 | | | | |
| NO DATA | | | | | | | 4 | 2 | | | 3 | | | | | | | | | | | | | 5 | 3 | 3 | | | | | |
| EVENT TOTALS | 5 | 4 | 4 | 4 | 6 | 12 | 20 | 9 | 8 | 8 | 8 | 8 | 10 | 3 | 6 | 6 | 7 | 4 | 9 | 11 | 4 | 9 | 9 | 11 | 7 | 7 | 11 | 2 | | | |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 01 | 0000 | 0732 | CULG | 0000 | 0142 | | | | | | | | IS,W |
| | | | CULG | | | | 0000 | 0732 | | | | | IIIN,W |
| | | | CULG | | | | 0022 | 0620 | | | | | IN,W |
| | | | CULG | | | | 0034.5 | 0035 | 2 | 0034.5 | 0035 | 1 | IIIB,V |
| | | | CULG | 0142 | 0732 | 1 | | | | | | | IS |
| | | | CULG | 0202 | 0217 | 1 | | | | | | | IIIN |
| | | | CULG | | | | 0305 | 0306 | 1 | 0305 | 0306 | 1 | UNCLF |
| | | | CULG | 0334 | 0347 | 2 | | | | | | | IIIN |
| | | | CULG | | | | 0335.5 | | | 0335.5 | | | IIIB,W |
| | | | CULG | | | | 0412 | | | 0412 | 0412.5 | | IIIG,W |
| | | | CULG | 0428 | | 1 | 0428 | 0428.5 | 1 | | | | IIIG |
| | | | CULG | | | | 0556 | 0732 | 1 | 0556 | 0602 | 1 | IIIN |
| | | | CULG | 0558 | 0620 | 3 | | | | | | | N,DCIM |
| | | | CULG | | | | 0620 | 0732 | | | | | IS,W |
| | 0728 | 1543 | WEIS | | | | 0733 | 1543 | 1 | | | | IN |
| | 0740 | 1600 | DWIN | | | | | | | | | | |
| | | | WEIS | | | | 0754.1 | 0754.2 | 1 | | | | IIIB |
| | | | WEIS | | | | 0812.6 | 0812.9 | 2 | | | | IIIG |
| | | | WEIS | | | | 1026.1 | 1026.6 | 1 | | | | IIIG |
| | | | WEIS | | | | 1130.2 | 1130.3 | 1 | | | | IIIB |
| | | | PALE | | | | 1200.2 | 0075.0 | 1 | | | II | |
| | | | WEIS | | | | 1200.4 | 1200.5 | 1 | | | | IIIB |
| | 1401 | 2400 | HARV | | | | 1400 | 2100 | 1 | | | | IN |
| | | | WEIS | | | | 1417.6 | 1417.9 | 2 | | | | IIIB |
| | | | HARV | 1618 | | 2 | | | | | | | IIIG |
| | 2046 | 2400 | CULG | 2046 | 2250 | 1 | 2100 | 2234 | 1 | | | | IS,DC |
| | | | CULG | | | | 2100 | 2250 | | | | | IIIS,W |
| | | | HARV | | | | 2100 | 2400 | 3 | | | | I |
| | | | CULG | | | | 2101 | 2329 | 1 | | | | IIIN |
| | | | HARV | | | | 2108 | 2200 | 2 | | | | IIIN |
| | | | PALE | | | | 2122.2 | 2129.6 | 1 | | | | CONT |
| | | | HARV | | | | 2129 | 2130 | 1 | 2129 | 2130 | 1 | IIIG |
| | | | PALE | | | | 2153.5 | 2153.7 | 1 | | | | III |
| | | | CULG | | | | 2156.5 | | 2 | | | | IIIB |
| | | | CULG | 2250 | 2400 | | 2234 | 2400 | | | | | IS,W |
| | | | CULG | | | | 2250 | 2400 | | | | | IIIN,W |
| | | | CULG | | | | 2335 | 2335.5 | 1 | 2335 | 2335.5 | 2 | IIIG |
| | | | CULG | 2355.5 | 2356 | 1 | 2355.5 | 2356 | 1 | 2355.5 | 2356 | 1 | IIIG |
| 02 | 0000 | 0746 | CULG | 0000 | 0746 | | 0000 | 0051 | | | | | IS,W |
| | | | CULG | | | | 0008 | 0729 | 1 | | | | IIIN |
| | | | CULG | | | | 0049.5 | 0050 | 1 | 0049.5 | 0050.5 | 1 | IIIG |
| | | | CULG | 0112 | 0131 | 1 | | | | | | | IIIG,N |
| | | | CULG | | | | | | | 0250.5 | | 1 | IIIB |
| | | | CULG | | | | 0252 | 0252.5 | 1 | 0252 | 0252.5 | 1 | IIIG |
| | | | LEAR | | | | 0540.5 | 0630.5 | 1 | | | | S |
| | | | LEAR | | | | 0700.5 | 0703.5 | 1 | | | | CONT |
| | | | CULG | | | | 0705 | 0725 | | | | | IS,W |
| | | | LEAR | | | | 0722.7 | 0847.5 | 1 | | | | B |
| | 0725 | 1600 | DWIN | 0725 | 0825 | 1 | | | | | | | I |
| | | | CULG | | | | 0725 | 0746 | 1 | | | | IS,DC |
| | | | CULG | | | | 0729 | 0746 | 1 | | | | IIIS |
| | 0755 | 1543 | WEIS | | | | 0757 | 1543 | 1 | | | | IN |
| | | | WEIS | | | | 0910.8 | 0910.9 | 2 | | | | IIIB |
| | | | LEAR | | | | 0910.8 | 0911.0 | 1 | | | | III |
| | | | DWIN | 1242.5 | 1242.8 | 1 | | | | | | | IIIG |
| | 1335 | 1520 | BLEN | | | | | | | | | | |
| | 1546 | 2345 | HARV | | | | 1549 | | 2 | | | | IIIG |
| | | | HARV | 1710 | 1714 | 3 | | | | | | | IIIG |
| | | | HARV | | | | 1807 | | 1 | | | | IIIG |
| | | | HARV | | | | 1820 | 2220 | 3 | | | | IC |
| | | | HARV | | | | 1839 | 1922 | 3 | 1839 | 1922 | 3 | IIIS |
| | | | SGMR | | | | 1859.0 | 2002.0 | 2 | | | | B |
| | | | PALE | | | | 1859.6 | 1903.8 | 2 | | | | CONT |
| | | | PALE | | | | 1904.3 | 1944.0 | 2 | | | IV | |
| | | | HARV | | | | 1922 | 2052 | 3 | 1922 | 2052 | 3 | IIIN |
| | | | PALE | | | | 1944.0 | 0406.0 | 2 | | | | B |
| | | | CULG | | | | 2046 | 2155 | 2 | | | | IIIS |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 02 | | | CULG | | | | 2046 | 2155 | 1 | | | | IS |
| | 2046 | 2400 | CULG | 2046 | 2400 | 2 | | | | | | | IS,C |
| | | | HARV | | | | 2056 | 2105 | 3 | 2056 | 2105 | 3 | IIIGG |
| | | | HARV | | | | 2220 | 2345 | 2 | | | | IC |
| | | | CULG | | | | 2246 | 2350 | | | | | IIIN,W |
| | | | CULG | | | | 2247.5 | | 1 | | | | IIIB |
| | | | CULG | | | | 2328.5 | | 1 | | | | IIIB |
| | | | HARV | | | | 5151 | 1820 | 1 | | | | IN |
| 03 | 0000 | 0746 | CULG | 0000 | 0600 | 1 | | | | | | | IS |
| | | | CULG | | | | 0006.5 | 0007.5 | 1 | | | | IIIG,U |
| | | | CULG | 0008 | 0008.5 | 1 | 0008 | 0009 | 1 | | | | IIIG |
| | | | CULG | | | | 0048 | 0746 | | | | | IIIN,W |
| | | | LEAR | | | | 0100.7 | 0121.8 | 1 | | | | S |
| | | | CULG | | | | 0101 | | 2 | 0101 | | 2 | IIIB |
| | | | CULG | | | | 0104 | | | 0104 | | | IIIB,W |
| | | | LEAR | | | | 0209.2 | 0308.2 | 1 | | | | S |
| | | | CULG | 0339.5 | 0340 | | 0339.5 | 0340 | | | | | IIIG,W |
| | | | CULG | | | | | | | 0419 | 0425 | | IIIN,W |
| | | | CULG | | | | 0419 | 0736 | 1 | | | | IIIN |
| | | | CULG | | | | 0518 | 0551 | | | | | IS,W |
| | | | CULG | | | | 0551 | 0600 | 1 | | | | IS,DC |
| | | | CULG | | | | 0600 | 0632 | 1 | | | | IS,C,DC |
| | | | CULG | 0600 | 0746 | 1 | | | | | | | IS,C |
| | | | CULG | | | | 0632 | 0746 | 1 | | | | IS,DC |
| | | | CULG | 0651 | 0719 | 1 | 0651 | 0726 | 1 | | | | SCINT |
| | 0728 | 1045 | WEIS | | | | 0731 | 1544 | 2 | | | | IS,DCIM |
| | 1112 | 1545 | WEIS | | | | 0736.1 | 0736.3 | 2 | | | | IIIG |
| | | | WEIS | | | | 0756.7 | 0757.1 | 2 | | | | IIIG |
| | | | BLEN | | | | 0809.3 | 1058.0 | 2 | | | | IIIS |
| | 0810 | 1600 | DWIN | 0810 | 1100 | 1 | | | | | | IV | |
| | | | WEIS | | | | 0822.4 | 0822.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 0852.3 | 0852.8 | 2 | | | | IIIG |
| | 0805 | 1520 | BLEN | 0858.8 | 0900.3 | 2 | 0852.2 | 0904.7 | 2 | | | | IIIGG |
| | | | WEIS | | | | 0858.9 | 0900.3 | 2 | | | | IIIGG |
| | | | WEIS | | | | 0902.5 | 0902.6 | 1 | | | | IIIB |
| | | | WEIS | | | | 0903.9 | 0904.7 | 2 | | | | IIIGG |
| | | | LEAR | | | | 0903.9 | 0904.9 | 2 | | | | CONT |
| | | | WEIS | | | | 0909.1 | 0909.3 | 2 | | | | IIIG |
| | | | WEIS | | | | 0921.9 | 0922.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 0933.3 | 0934.5 | 2 | | | | IIIG |
| | | | WEIS | | | | 0938.4 | 0938.5 | 1 | | | | IIIB |
| | | | WEIS | | | | 0946.8 | 0947.0 | 1 | | | | IIIB |
| | | | WEIS | | | | 0956.5 | 0957.5 | 2 | | | | IIIG |
| | | | WEIS | | | | 1036.5 | 1042.3 | 3 | | | | IIIGG |
| | | | BLEN | | | | 1105.5 | 1106.1 | 2 | | | | IIIG |
| | | | DWIN | 1113.4 | 1115.0 | 1 | | | | | | IV | |
| | | | BLEN | 1113.8 | 1113.9 | 2 | | | | | | | IIIB |
| | | | BLEN | | | | 1126.7 | 1135.1 | 1 | | | | I |
| | | | BLEN | | | | 1203.8 | 1205.7 | 2 | | | | IIIG |
| | | | WEIS | | | | 1203.8 | 1205.7 | 2 | | | | RS |
| | | | WEIS | | | | 1316.0 | 1316.2 | 1 | | | | IIIB |
| | | | WEIS | | | | 1327.5 | 1327.8 | 1 | | | | IIIB |
| | | | BLEN | | | | 1329.1 | 1330.3 | 2 | | | | IIIG,RS |
| | | | WEIS | | | | 1329.2 | 1330.3 | 2 | | | | RS |
| | 1401 | 2345 | HARV | | | | 1406 | 1700 | 2 | | | | IN |
| | | | WEIS | | | | 1410.2 | 1410.3 | 1 | | | | IIIB |
| | | | HARV | | | | 1414 | 1905 | 2 | | | | IIIN |
| | | | HARV | | | | 1431 | 1432 | 3 | | | | IIIG |
| | | | WEIS | | | | 1431.4 | 1431.8 | 2 | | | | RS |
| | | | BLEN | | | | 1431.4 | 1441.4 | 3 | | | | IIIGG,RS |
| | | | WEIS | | | | 1439.8 | 1441.5 | 3 | | | | IIIG,RS |
| | | | HARV | 1440 | 1441 | 2 | 1440 | 1441 | 3 | | | | IIIG |
| | | | WEIS | | | | 1451.0 | 1451.7 | 2 | | | | IIIG |
| | | | WEIS | | | | 1529.3 | 1529.4 | 1 | | | | IIIB |
| | | | HARV | | | | 1657 | 1658 | 2 | | | | IIIG |
| | | | HARV | | | | 1700 | 2020 | 3 | | | | IC |
| | | | HARV | | | | 2020 | 2345 | 2 | | | | IC |
| | | | CULG | | | | 2046 | 2400 | | | | | IIIN,W |
| | 2046 | 2400 | CULG | 2046 | 2325 | 1 | | | | | | | IS |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 03 | | | CULG | | | | 2046 | 2147 | 1 | | | | IS,DC |
| | | | CULG | | | | 2147 | 2400 | | | | | IS,W |
| | | | CULG | 2325 | 2400 | 2 | | | | | | | IS |
| 04 | | | CULG | | | | 0000 | 0610 | | | | | IS,W |
| | | | CULG | | | | 0000 | 0005 | 1 | | | | DC |
| | 0000 | 0746 | CULG | 0000 | 0112 | 2 | | | | | | | IS |
| | | | CULG | 0112 | 0250 | 1 | | | | | | | IS |
| | | | LEAR | | | | 0119.9 | 0120.1 | 1 | | | | III |
| | | | CULG | | | | 0120 | 0746 | | | | | IIIN,W |
| | | | LEAR | | | | 0216.0 | 0216.4 | 1 | | | | CONT |
| | | | CULG | 0250 | 0450 | | | | | | | | IS,W |
| | | | LEAR | | | | 0430.6 | 0431.0 | 1 | | | | CONT |
| | | | CULG | 0450 | 0600 | 1 | | | | | | | IS |
| | | | CULG | 0600 | 0746 | 1 | | | | | | | IS,C |
| | | | CULG | | | | 0610 | 0746 | 1 | | | | IS,DC |
| | 0725 | 1546 | WEIS | | | | 0729 | 1545 | 2 | | | | IN,DCIM |
| | | | LEAR | | | | 0738.2 | 0744.1 | 1 | | | | CONT |
| | 0805 | 1520 | BLEN | | | | 0805 E | 1300 | 2 | | | | I |
| | | | BLEN | | | | 0838.2 | 0838.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 0838.2 | 0838.7 | 2 | | | | IIIG |
| | | | LEAR | | | | 0838.6 | 0838.8 | 1 | | | | CONT |
| | | | BLEN | | | | 0918.3 | 0918.7 | 1 | | | | IIIG |
| | | | WEIS | | | | 0942.0 | 0942.2 | 1 | | | | IIIB |
| | | | WEIS | | | | 1051.9 | 1056.2 | 3 | | | | IIIGG,DCIM |
| | 0721 | 1600 | DWIN | 1052.0 | 1055.0 | 2 | | | | | | IV | |
| | | | BLEN | 1052.1 | 1054.5 | 2 | 1052.3 | 1054.4 | 2 | | | | IIIG,DCIM |
| | | | WEIS | | | | 1123.7 | 1125.0 | 2 | | | | IIIG |
| | | | WEIS | | | | 1144.4 | 1144.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 1148.3 | 1148.4 | 2 | | | | IIIG |
| | | | WEIS | | | | 1157.3 | 1157.4 | 1 | | | | IIIB |
| | | | BLEN | 1223.5 | 1223.9 | 1 | | | | | | | IIIG |
| | | | DWIN | 1223.5 | 1224.5 | 2 | | | | | | IV | |
| | | | WEIS | | | | 1255.3 | 1257.4 | 1 | | | | IIIB |
| | 1401 | 2400 | HARV | | | | 1411 | 1740 | 1 | | | | IN |
| | | | WEIS | | | | 1413.6 | 1418.5 | 3 | | | | IIIGG/V |
| | | | HARV | | | | 1414 | 1417 | 3 | | | | IIIGG |
| | | | BLEN | | | | 1414.5 | 1417.3 | 3 | | | | IIIGG |
| | | | SGMR | | | | 1444.3 | 1448.7 | 2 | | | | V |
| | | | WEIS | | | | 1532.7 | 1532.9 | 2 | | | | IIIG |
| | | | HARV | | | | 1630 | 2354 | 2 | 1702 | 1915 | 2 | IIIN |
| | | | HARV | | | | 1726 | | 2 | | | | IIIG,U |
| | | | HARV | | | | 1731 | 1733 | 3 | 1731 | 1733 | 2 | IIIG,V |
| | | | HARV | | | | 1740 | 1920 | 3 | | | | I |
| | | | PALE | | | | 1801.5 | 1803.8 | 1 | | | | CONT |
| | | | PALE | | | | 1819.7 | 1821.7 | 2 | | | | CONT |
| | | | SGMR | | | | 1819.8 | 1821.0 | 2 | | | | V |
| | | | HARV | | | | 1820 | 1822 | 3 | 1820 | 1822 | 3 | IIIG,V |
| | | | HARV | | | | 1904 | 1915 | 3 | 1904 | 1915 | 3 | IIIGG |
| | | | SGMR | | | | 1911.4 | 1925.6 | 2 | | | | S |
| | | | PALE | | | | 1911.5 | 1914.6 | 2 | | | | CONT |
| | | | HARV | 1926 | 1927 | 3 | 1926 | 1927 | 3 | 1926 | 1927 | 3 | IIIG |
| | | | PALE | | | | 1926.5 | 1927.1 | 2 | | | | III |
| | | | HARV | | | | 2020 | 2400 | 3 | | | | I |
| | | | CULG | | | | 2046 | 2400 | | | | | IS,W |
| | 2046 | 2400 | CULG | 2046 | 2400 | 1 | | | | | | | IS |
| | | | CULG | | | | 2050 | 2400 | | | | | IIIN,W |
| | | | PALE | | | | 2328.3 | 2329.1 | 1 | | | | V |
| | | | CULG | | | | | | | 2328.5 | 2329 | | IIIG,W |
| | | | CULG | | | | 2328.5 | 2329 | 1 | | | | IIIG |
| 05 | 0000 | 0746 | CULG | 0000 | 0746 | 1 | | | | | | | IS |
| | | | CULG | | | | 0111.5 | | | | | | IIIB,W |
| | | | CULG | 0122 | 0122.5 | 1 | | | | | | | IIIG |
| | | | CULG | 0126 | 0127.5 | 1 | | | | | | | DCIM |
| | | | CULG | 0127.5 | | 1 | | | | | | | IIIB,RS |
| | | | CULG | 0400.5 | 0401 | 1 | 0401 | | 1 | | | | IIIB |
| | | | CULG | | | | 0516.5 | | 2 | | | | IIIB |
| | | | CULG | | | | 0600 | 0746 | | | | | IS,W |
| | | | CULG | | | | 0618 | | 1 | | | | IIIB |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | | |
| 05 | | | CULG | | | | 0714 | 0714.5 | 1 | | | | | IIIG |
| | | | CULG | | | | 0715.5 | | | | | | | IIIB,W |
| | 0723 | 1155 | DWIN | | | | | | | | | | | |
| | 0724 | 1420 | WEIS | | | | 0730 | 1548 | 2 | | | | | IS |
| | 0805 | 1525 | BLEN | | | | 0805 E | 1525 D | 2 | | | | | I |
| | 1425 | 1548 | WEIS | | | | 0944.4 | 0946.2 | 2 | | | | | IIIG |
| | | | WEIS | | | | 1010.6 | 1010.9 | 2 | | | | | IIIG |
| | | | BLEN | | | | 1029.4 | 1031.9 | 2 | | | | | IIIG |
| | | | BLEN | 1212.5 | 1227.8 | 1 | 1212.5 | 1227.8 | 1 | | | | | IIIS |
| | | | WEIS | | | | 1239.3 | 1241.6 | 2 | | | | | IIIG |
| | | | BLEN | 1321.5 | 1337.3 | 1 | 1321.5 | 1337.3 | 1 | | | | | IIIS |
| | 1401 | 2400 | HARV | | | | 1401 | 2040 | 3 | | | | | IC |
| | 1415 | 1600 | DWIN | | | | | | | | | | | |
| | | | HARV | 1605 | 2353 | 2 | 1722 | 2352 | 2 | 1722 | 2248 | 2 | | IIIN |
| | | | HARV | | | | 1719 | | 3 | 1719 | | 2 | | IIIG |
| | | | HARV | | | | 1759 | 1810 | 3 | 1759 | 1810 | 3 | | IIIGG |
| | | | HARV | | | | 1923 | 1925 | 2 | 1923 | 1925 | 2 | | IIIG,V |
| | | | HARV | | | | 2040 | 2400 | 2 | | | | | IC |
| | 2046 | 2400 | CULG | 2046 | 2400 | | 2046 | 2118 | | | | | | IS,W |
| | | | CULG | | | | 2059 | 2126 | | | | | | IIIN,W |
| | | | HARV | | | | 2107 | 2108 | 3 | | | | | IIIG |
| | | | CULG | 2107.5 | 2108 | 1 | 2107.5 | 2108 | 2 | | | | | IIIG |
| | | | CULG | | | | 2114.5 | | 1 | | | | | IIIB |
| | | | PALE | | | | 2114.5 | 2213.0 | 2 | | | | | S |
| | | | CULG | | | | 2118 | 2400 | 1 | | | | | IS |
| | | | CULG | | | | 2126 | 2141 | 1 | | | | | IIIS |
| | | | HARV | | | | 2127 | 2138 | 3 | 2128 | 2138 | 2 | | IIIGG |
| | | | CULG | | | | 2128 | 2131 | 2 | | | | | IIIG,V |
| | | | CULG | | | | 2136 | 2137.5 | 3 | 2136 | 2137.5 | 2 | | IIIGG |
| | | | CULG | | | | 2141 | 2400 | | | | | | IIIS,W |
| | | | CULG | | | | 2207 | 2400 | 1 | | | | | IIIN |
| | | | CULG | | | | 2241 | | 2 | 2241 | | 1 | | IIIB |
| | | | CULG | | | | | | | 2245 | 2250 | 1 | | IIIN |
| | | | PALE | | | | 2245.3 | 2254.8 | 1 | | | | | CONT |
| | | | HARV | | | | 2248 | 2303 | 2 | | | | II | |
| | | | LEAR | | | | 2248.2 | 2248.4 | 1 | | | | | III |
| | | | CULG | | | | 2248.5 | 2315 | 2 | | | | II | |
| | | | CULG | | | | 2248.5 | | 2 | 2248.5 | | 2 | | IIIB |
| | | | LEAR | | | | 2250.6 | 2311.0 | 1 | | | | II | |
| | | | LEAR | | | | 2311.0 | 1051.0 | 1 | | | | | B |
| 06 | 0000 | 0746 | CULG | | | | 0000 | 0746 | 1 | | | | | IS |
| | | | CULG | | | | 0000 | 0327 | | | | | | IIIS,W |
| | | | CULG | 0000 | 0215 | | | | | | | | | IS,W |
| | | | CULG | | | | 0039 | 0327 | 1 | | | | | IIIN |
| | | | CULG | 0126 | | 1 | 0126.5 | 0127 | 2 | 0127 | | 2 | | IIIG |
| | | | CULG | 0140.5 | | 2 | 0140.5 | | 2 | | | | | IIIB |
| | | | CULG | | | | 0159.5 | | 2 | | | | | IIIB |
| | | | CULG | 0215 | 0746 | 1 | | | | | | | | IS |
| | | | CULG | | | | 0327 | 0746 | 1 | | | | | IIIS |
| | | | CULG | | | | | | | 0329 | 0330 | | | IIIB,W |
| | | | CULG | | | | | | | 0329 | 0330 | | | IIIB,W |
| | | | CULG | 0711 | 0712 | 2 | | | | | | | | IIIG |
| | | | LEAR | | | | 0716.4 | 0717.5 | 2 | | | | | CONT |
| | | | CULG | 0716.5 | 0717 | 1 | 0716.5 | 0717 | 3 | | | | | IIIG |
| | | | WEIS | | | | 0725 | 1549 | 2 | | | | | IIIN |
| | 0722 | 1550 | WEIS | | | | 0730 | 1550 | 2 | | | | | IS |
| | | | WEIS | | | | 0748.8 | 0753.4 | 3 | | | | | DCIM |
| | | | WEIS | | | | 0759.5 | 0759.7 | 2 | | | | | DCIM |
| | 0805 | 1530 | BLEN | | | | 0805 E | 1530 D | 2 | | | | | I,DC |
| | 0726 | 1600 | DWIN | 0914.3 | 0915.5 | 1 | | | | | | | IV | F |
| | | | WEIS | | | | 0922.7 | 0924.3 | 3 | | | | | DCIM |
| | | | BLEN | 0922.7 | 0925.8 | 3 | 0922.7 | 0925.8 | 3 | | | | | IIIGG |
| | | | DWIN | 0923.6 | 0924.2 | 2 | | | | | | | IV | P |
| | | | BLEN | 1234.2 | 1300.1 | 2 | | | | | | | | IIIGG |
| | | | WEIS | 1235.2 | 1242.2 | 2 | | | | | | | | DCIM |
| | | | BLEN | | | | 1310.6 | 1338.2 | 2 | | | | | IIIGG |
| | | | DWIN | 1328.0 | 1330.2 | 1 | | | | | | | IV | Z |
| | | | WEIS | | | | 1337.3 | 1338.4 | 3 | | | | | IIIGG |
| | | | BLEN | | | | 1408.7 | 1419.2 | 2 | | | | | IIIGG |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

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| DAY | TIMES OF OBSERVATION START UT | TIMES OF OBSERVATION END UT | STATION | EVENTS: DECIMETRIC BAND START UT | DECIMETRIC BAND END UT | DECIMETRIC BAND INT | METRIC BAND START UT | METRIC BAND END UT | METRIC BAND INT | DEKAMETRIC BAND START UT | DEKAMETRIC BAND END UT | DEKAMETRIC BAND INT | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | | | HARV | | | | 1409 | 1420 | 2 | | | | IIIGG |
| | | | DWIN | 1409.0 | 1410.0 | 1 | | | | | | | IV |
| | 1401 | 2400 | HARV | 1415 | 1953 | 2 | 1401 | 1640 | 2 | | | | I |
| | | | DWIN | 1517.1 | | 2 | | | | | | | IIIB |
| | | | HARV | 1621 | | 1 | 1620 | 1629 | 3 | 1620 | 1626 | 3 | IIIGG |
| | | | SGMR | | | | 1621.0 | 1621.6 | 2 | | | | V |
| | | | HARV | | | | 1630 | 2333 | 2 | 1704 | 1854 | 2 | IIIN |
| | | | HARV | | | | 1640 | 1840 | 3 | | | | IC |
| | | | HARV | | | | 1840 | 2400 | 2 | | | | I |
| | | | CULG | | | | 2048 | 2400 | | | | | IIIN,W |
| | | | CULG | 2048 | 2400 | | | | | | | | IS,W |
| | 2048 | 2400 | CULG | | | | 2048 | 2130 | 1 | | | | IS |
| | | | CULG | 2124 | 2125.5 | 1 | 2124.5 | 2128.5 | 3 | 2125 | 2126.5 | 3 | IIIGG |
| | | | PALE | | | | 2124.8 | 2128.9 | 3 | | | | V |
| | | | HARV | 2125 | | 2 | 2125 | 2128 | 3 | 2125 | 2128 | 3 | IIIGG |
| | | | SGMR | | | | 2125.0 | 2125.9 | 2 | | | | V |
| | | | CULG | | | | 2130 | 2400 | 1 | | | | IS |
| 07 | | | CULG | | | | 0000 | 0746 | | | | | IIIN,W |
| | | | CULG | 0000 | 0746 | | | | | | | | IS,W |
| | 0000 | 0746 | CULG | | | | 0000 | 0045 | 1 | | | | IS |
| | | | CULG | | | | 0004 | 0030 | 1 | | | | IIIN |
| | | | LEAR | | | | 0004.0 | 1050.0 | 1 | | | | B |
| | | | LEAR | | | | 0027.9 | 0028.9 | 3 | | | | CONT |
| | | | CULG | | | | 0028 | 0029 | 3 | 0028 | 0028.5 | 3 | IIIG |
| | | | PALE | | | | 0028.0 | 0030.2 | 2 | | | | V |
| | | | CULG | | | | 0045 | 0417 | | | | | IS,W |
| | | | CULG | 0341 | 0342 | 2 | 0341.5 | 0342 | 1 | | | | IIIG |
| | | | CULG | 0343.5 | 0344 | 2 | | | | | | | IIIG |
| | | | CULG | | | | 0417 | 0746 | 1 | | | | IS,DC |
| | | | CULG | | | | 0419 | 0732 | 1 | | | | IIIN |
| | | | CULG | 0449 | 0451.5 | 2 | | | | | | | IIIGG |
| | | | CULG | 0511.5 | 0512 | 2 | | | | | | | IIIG |
| | | | CULG | | | | 0610.5 | | 2 | | | | IIIB |
| | | | CULG | | | | 0644.5 | 0645 | 2 | 0645 | | 1 | IIIG |
| | | | LEAR | | | | 0644.8 | 0645.6 | 2 | | | | CONT |
| | | | CULG | | | | 0645.5 | | 2 | 0645.5 | | 1 | IIIB |
| | | | CULG | | | | 0717 | | 1 | 0717 | | 2 | IIIB |
| | | | WEIS | | | | 0728 | 1552 | 2 | | | | IN |
| | 0721 | 1552 | WEIS | | | | 0730 | 1549 | 2 | | | | IIIN |
| | 0805 | 1438 | BLEN | | | | 0815.4 | 0816.6 | 2 | | | | IIIG |
| | | | LEAR | | | | 0815.5 | 0816.8 | 2 | | | | CONT |
| | | | WEIS | | | | 0815.5 | 0816.8 | 3 | | | | IIIG |
| | | | BLEN | 0840.4 | 0840.6 | 2 | | | | | | | IIIG |
| | | | BLEN | | | | 0849.5 | 1438 D | 2 | | | | I,DC |
| | | | BLEN | | | | 0938.8 | 1100.3 | 3 | | | | IIIS |
| | | | LEAR | | | | 0938.8 | 0939.4 | 2 | | | | CONT |
| | | | WEIS | | | | 0938.8 | 0939.5 | 3 | | | | IIIG |
| | | | WEIS | | | | 1002.5 | 1011.2 | 2 | | | | IIIGG |
| | | | LEAR | | | | 1009.2 | 1009.8 | 2 | | | | CONT |
| | | | WEIS | | | | 1017.7 | 1023.4 | 3 | | | | IIIGG |
| | | | LEAR | | | | 1018.5 | 1020.2 | 3 | | | | CONT |
| | 0720 | 1600 | DWIN | 1018.6 | 1023.6 | 2 | | | | | | | IV |
| | | | LEAR | | | | 1021.8 | 1023.3 | 2 | | | | CONT |
| | | | WEIS | | | | 1050.2 | 1100.4 | 3 | | | | IIIGG |
| | | | DWIN | 1058.0 | 1059.5 | 2 | | | | | | | IIIG |
| | | | BLEN | | | | 1140.4 | 1140.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 1251.9 | 1255.6 | 3 | | | | IIIGG |
| | | | BLEN | 1322.3 | 1331.8 | | 1319.2 | 1323.7 | 2 | | | | IIIGG |
| | | | DWIN | 1322.5 | 1322.7 | 2 | | | | | | | IIIG |
| | | | DWIN | 1331.5 | 1331.7 | 2 | | | | | | | IIIG |
| | | | BLEN | | | | 1341.3 | 1351.9 | 3 | | | | IIIGG |
| | | | WEIS | | | | 1341.4 | 1351.9 | 3 | | | | IIIGG |
| | | | SGMR | | | | 1343.2 | 1345.1 | 1 | | | | V |
| | | | DWIN | 1345.1 | | 1 | | | | | | | IIIB |
| | | | SGMR | | | | 1348.2 | 1349.8 | 2 | | | | V |
| | 1401 | 2400 | HARV | | | | 1402 | 1500 | 1 | | | | IN |
| | | | HARV | | | | 1415 | 2353 | 2 | 1706 | 2004 | 1 | IIIN |
| | | | HARV | | | | 1500 | 1720 | 2 | | | | I |
| | | | BLEN | 1522.9 | 1523.9 | 2 | 1522.5 | 1525.3 | 2 | | | | IIIGG |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

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| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 07 | | | HARV | 1534 | 1535 | 1 | 1534 | 1536 | 3 | 1534 | 1536 | 2 | IIIGG |
| | | | DWIN | 1534.3 | 1535.5 | 2 | | | | | | | IV |
| | | | WEIS | | | | 1534.4 | 1536.7 | 3 | | | | IIIGG |
| | | | SGMR | | | | 1535.5 | 1536.8 | 1 | | | | V |
| | | | HARV | | | | 1702 | | 2 | 1702 | | 2 | IIIG |
| | | | SGMR | | | | 1708.5 | 1709.0 | 2 | | | | CONT |
| | | | HARV | | | | 1709 | 1710 | 3 | 1709 | 1710 | 2 | IIIGG |
| | | | HARV | | | | 1720 | 2020 | 1 | | | | I |
| | | | HARV | | | | 1739 | 1740 | 3 | 1739 | 1740 | 3 | IIIG |
| | | | PALE | | | | 1739.4 | 1740.3 | 2 | | | | III |
| | | | SGMR | | | | 1739.6 | 1740.0 | 2 | | | | CONT |
| | | | HARV | | | | 1743 | | 2 | 1743 | | 2 | IIIG |
| | | | HARV | | | | 1815 | | 2 | 1815 | | 2 | IIIG |
| | | | PALE | | | | 1820.3 | 1825.3 | 2 | | | | V |
| | | | HARV | | | | 1821 | 1824 | 3 | 1821 | 1824 | 3 | IIIGG |
| | | | HARV | 1833 | 1838 | 3 | 1834 | 1838 | 3 | | | | IIIGG |
| | | | HARV | | | | 1844 | 1847 | 3 | 1844 | 1847 | 3 | IIIGG |
| | | | PALE | | | | 1844.2 | 1846.8 | 2 | | | | V |
| | | | SGMR | | | | 1844.5 | 1846.2 | 1 | | | | CONT |
| | | | HARV | | | | 1853 | | 2 | 1853 | | 2 | IIIG |
| | | | PALE | | | | 1853.3 | 1902.3 | 1 | | | | CONT |
| | | | HARV | | | | 1859 | 1902 | 2 | 1859 | 1902 | 2 | IIIG |
| | | | PALE | | | | 1904.5 | 1908.6 | 3 | | | | V |
| | | | HARV | | | | 1905 | 1908 | 3 | 1905 | 1908 | 3 | IIIGG |
| | | | SGMR | | | | 1905.0 | 1905.9 | 2 | | | | V |
| | | | HARV | | | | 1930 | 1931 | 2 | 1930 | 1931 | 2 | IIIG |
| | | | PALE | | | | 1930.0 | 1932.3 | 1 | | | | CONT |
| | | | HARV | | | | 1940 | | 2 | 1940 | | 2 | IIIG |
| | | | PALE | | | | 1940.0 | 1941.2 | 2 | | | | V |
| | | | PALE | | | | 2016.4 | 2017.1 | 1 | | | | III |
| | | | HARV | | | | 2020 | 2220 | 3 | | | | I |
| | | | PALE | | | | 2035.6 | 2036.5 | 2 | | | | III |
| | | | SGMR | | | | 2035.7 | 2036.1 | 1 | | | | V |
| | | | HARV | | | | 2036 | | 3 | 2036 | | 3 | IIIG,V |
| | | | CULG | | | | 2046 | 2400 | | | | | IIIS,W |
| | | | CULG | | | | 2046 | 2231 | | | | | IS,W |
| | 2046 | 2400 | CULG | 2046 | 2120 | 1 | | | | | | | IS,DC |
| | | | CULG | 2057 | 2101 | 1 | | | | | | | DCIM |
| | | | CULG | 2120 | 2400 | | | | | | | | IS,W |
| | | | CULG | 2218 | 2227 | 1 | | | | | | | N,DCIM |
| | | | HARV | | | | 2220 | 2400 | 1 | | | | I |
| | | | PALE | | | | 2234.4 | 2234.8 | 1 | | | | III |
| | | | CULG | | | | 2234.5 | 2235 | 1 | | | | IIIG |
| | | | HARV | | | | 2300 | 2302 | 3 | 2300 | 2302 | 2 | IIIG |
| | | | PALE | | | | 2300.0 | 0409.0 | 1 | | | | B |
| | | | PALE | | | | 2300.1 | 2303.1 | 3 | | | | CONT |
| | | | LEAR | | | | 2300.3 | 2302.4 | 2 | | | | CONT |
| | | | CULG | | | | 2300.5 | 2303 | 3 | 2300.5 | 2303 | 2 | IIIGG |
| | | | CULG | | | | 2343.5 | | 1 | 2343.5 | | 1 | IIIB |
| | | | LEAR | | | | 2343.5 | 1050.0 | 1 | | | | B |
| | | | PALE | | | | 2343.5 | 2354.3 | 1 | | | | S |
| | | | HARV | | | | 2349 | 2350 | 3 | | | | IIIG |
| | | | CULG | | | | 2349 | | 1 | | | | IIIB |
| | | | CULG | | | | 2349.5 | | 2 | | | | IIIB |
| | | | CULG | | | | 2353.5 | 2354 | 2 | 2353.5 | 2354 | 2 | IIIG |
| 08 | 0000 | 0746 | CULG | 0000 | 0746 | | | | | | | | IS,W |
| | | | CULG | | | | 0000 | 0125 | | | | | IIIS,W |
| | | | CULG | | | | 0025.5 | | 1 | | | | RSDP |
| | | | CULG | | | | | | | 0029 | 0347 | | IIIN,W |
| | | | CULG | | | | 0059.5 | 0100 | 2 | 0059.5 | 0100.5 | 2 | IIIG |
| | | | PALE | | | | 0059.7 | 0105.4 | 2 | | | | CONT |
| | | | LEAR | | | | 0059.8 | 0105.3 | 3 | | | | CONT |
| | | | CULG | | | | 0101 | 0721 | 1 | | | | IIIN |
| | | | CULG | | | | 0103 | 0105.5 | 3 | 0103.5 | 0106 | 3 | IIIGG,V |
| | | | PALE | | | | 0107.8 | 0115.3 | 2 | | | | CONT |
| | | | CULG | | | | 0108 | | 2 | | | | IIIB |
| | | | CULG | 0110 | 0658 | 2 | | | | | | | IIIN |
| | | | CULG | | | | | | | 0114.5 | | 1 | IIIB |
| | | | CULG | | | | 0120.5 | 0121 | 2 | | | | IIIG |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION START UT | TIMES OF OBSERVATION END UT | STATION | EVENTS: DECIMETRIC BAND START UT | DECIMETRIC BAND END UT | DECIMETRIC BAND INT | METRIC BAND START UT | METRIC BAND END UT | METRIC BAND INT | DEKAMETRIC BAND START UT | DEKAMETRIC BAND END UT | DEKAMETRIC BAND INT | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | | | LEAR | | | | 0120.6 | 0121.5 | 2 | | | | CONT |
| | | | PALE | | | | 0120.6 | 0121.5 | 2 | | | | V |
| | | | CULG | | | | 0125 | 0746 | | | | | IIIN,W |
| | | | CULG | | | | | | | 0135 | 0148 | | W,SWF |
| | | | CULG | | | | | | | 0329 | 0353 | 1 | SWF |
| | | | CULG | | | | 0424 | 0738 | 2 | | | | IIIN |
| | | | CULG | | | | 0449 | 0451.5 | 3 | 0449.5 | 0452.5 | 2 | IIIGG |
| | | | LEAR | | | | 0449.2 | 0452.5 | 3 | | | | CONT |
| | | | CULG | | | | 0558 | 0559.5 | 3 | 0558 | 0559 | 1 | IIIG |
| | | | LEAR | | | | 0558.2 | 0559.3 | 2 | | | | CONT |
| | | | CULG | | | | 0601.5 | 0603 | 3 | 0602 | 0603 | 1 | IIIGG |
| | | | LEAR | | | | 0601.8 | 0603.2 | 2 | | | | CONT |
| | | | LEAR | | | | 0624.5 | 0625.1 | 2 | | | | CONT |
| | | | CULG | | | | 0624.5 | 0625 | 3 | 0624.5 | 0625 | 1 | IIIG |
| | | | LEAR | | | | 0642.0 | 0643.1 | 2 | | | | CONT |
| | | | CULG | 0656 | 0658 | 2 | | | | | | | DCIM |
| | 0908 | 1553 | WEIS | | | | 0735 | 1548 | 2 | | | | IIIN |
| | | | LEAR | | | | 0739.8 | 0740.5 | 2 | | | | CONT |
| | | | LEAR | | | | 0757.2 | 0802.5 | 3 | | | | CONT |
| | | | WEIS | | | | 0757.2 | 0802.7 | 3 | | | | IIIGG |
| | 0715 | 1600 | DWIN | 0802.4 | 0802.7 | 1 | | | | | | | IIIG |
| | | | DWIN | 0805.1 | 0805.2 | 2 | | | | | | | IIIG |
| | | | DWIN | 0806.3 | 0806.5 | 2 | | | | | | | IIIG |
| | 0715 | 1600 | DWIN | 0808.5 | 0808.6 | 2 | | | | | | | IIIG |
| | 0719 | 0856 | WEIS | | | | 0810 | 1551 | 2 | | | | IN |
| | | | LEAR | | | | 0816.8 | 0819.0 | 2 | | | | CONT |
| | | | WEIS | | | | 0816.8 | 0818.5 | 3 | | | | IIIGG |
| | | | WEIS | 0837.6 | 0838.1 | 2 | | | | | | | DCIM |
| | | | DWIN | 0837.6 | | 3 | | | | | | | IIIB |
| | | | DWIN | 0838.1 | | 2 | | | | | | | IIIB |
| | | | DWIN | 0841.1 | 0843.5 | 2 | | | | | | | IIIG |
| | | | WEIS | 0842.6 | 0842.8 | 2 | | | | | | | DCIM |
| | | | DWIN | 0930.0 | 0830.6 | 1 | | | | | | | IIIG |
| | | | DWIN | 0936.1 | | 2 | | | | | | | IIIB |
| | | | DWIN | 0939.0 | 0944.4 | 2 | | | | | | | IIIG |
| | | | WEIS | 0939.2 | 0942.3 | 2 | | | | | | | DCIM |
| | | | LEAR | | | | 0942.8 | 0943.8 | 2 | | | | CONT |
| | | | WEIS | | | | 1000.5 | 1005.6 | 3 | | | | IIIGG |
| | | | DWIN | 1040.5 | 1041.0 | 2 | | | | | | | IIIG |
| | 1020 | 1530 | BLEN | 1040.5 | 1040.9 | 1 | | | | | | | IIIG |
| | | | WEIS | | | | 1042.3 | 1043.7 | 3 | | | | IIIGG |
| | | | DWIN | 1044.2 | 1044.4 | 1 | | | | | | | IIIG |
| | | | BLEN | | | | 1131.3 | 1530 D | 2 | | | | I,DC |
| | | | DWIN | 1138.5 | 1146.0 | 2 | | | | | | | IIIGG |
| | | | BLEN | 1138.5 | 1145.5 | 2 | | | | | | | IIIGG |
| | | | WEIS | 1138.5 | 1145.4 | 2 | | | | | | | DCIM |
| | | | BLEN | | | | 1149.3 | 1205.2 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1158.6 | 1205.3 | 3 | | | | IIIGG |
| | 1402 | 2400 | HARV | | | | 1402 | 2400 | 1 | | | | I |
| | | | DWIN | 1458.0 | | 1 | | | | | | | IIIB |
| | | | HARV | | | | 1513 | 1815 | 2 | 1813 | 1815 | 2 | IIIG,U |
| | | | SGMR | | | | 1540.4 | 1541.0 | 1 | | | | CONT |
| | | | DWIN | 1548.4 | 1548.6 | 2 | | | | | | | IIIG |
| | | | SGMR | | | | 1606.8 | 1707.0 | 1 | | | | CONT |
| | | | HARV | 1607 | | 1 | 1606 | 1607 | 3 | 1607 | | 1 | IIIG |
| | | | HARV | | | | 1614 | 1615 | 2 | | | | IIIG |
| | | | HARV | 1705 | 2354 | 2 | 1542 | 2339 | 2 | 1624 | 2339 | 2 | IIIN |
| | | | SGMR | | | | 1808.9 | 1810.1 | 1 | | | | CONT |
| | | | HARV | | | | 1809 | 1810 | 2 | 1809 | 1810 | 2 | IIIG,U |
| | | | SGMR | | | | 1837.9 | 1838.5 | 3 | | | | V |
| | | | HARV | | | | 1838 | 1840 | 3 | 1838 | 1840 | 3 | IIIGG |
| | | | SGMR | | | | 1839.3 | 1840.3 | 1 | | | | CONT |
| | | | PALE | | | | 1908.8 | 1913.7 | 1 | | | | CONT |
| | | | PALE | | | | 1920.2 | 1954.6 | 2 | | | | S |
| | | | PALE | | | | 1937.9 | 1940.8 | 3 | | | | V |
| | | | HARV | | | | 1947 | | 2 | 1947 | | 2 | IIIG |
| | | | HARV | | | | 1952 | 1954 | 2 | 1952 | 1954 | 2 | IIIG |
| | | | HARV | | | | 2019 | 2020 | 3 | 2019 | 2020 | 3 | IIIG,V |
| | | | PALE | | | | 2019.4 | 2020.1 | 2 | | | | III |
| | | | SGMR | | | | 2019.5 | 2019.9 | 1 | | | | V |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 08 | | | HARV | | | | 2026 | 2030 | 3 | 2028 | 2030 | 2 | IIIG,U |
| | | | PALE | | | | 2028.2 | 2030.6 | 2 | | | | V |
| | | | PALE | | | | 2034.7 | 2035.5 | 1 | | | | III |
| | 2046 | 2400 | CULG | 2046 | 2400 | | | | | | | | IS,W |
| | | | CULG | | | | 2046 | 2400 | | | | | IIIN,W |
| | | | PALE | | | | 2115.5 | 2116.2 | 2 | | | | III |
| | | | CULG | 2123.5 | | 2 | 2123.5 | | 1 | | | | IIIB |
| | | | CULG | 2140 | 2141 | 3 | | | | | | | IIIG |
| | | | HARV | 2140 | 2141 | 3 | 2140 | 2141 | 3 | | | | IIIG |
| | | | CULG | | | | 2145 | 2240 | 1 | | | | IIIN |
| | | | PALE | | | | 2145.8 | 2209.6 | 2 | | | | S |
| | | | HARV | | | | 2200 | 2205 | 3 | 2200 | 2205 | 2 | IIIG |
| | | | CULG | | | | 2200 | 2340 | 2 | | | | IIIG,V,N |
| | | | CULG | 2226.5 | 2227.5 | | | | | | | | IIIG,W |
| | | | HARV | | | | 2245 | | 3 | 2245 | | 2 | IIIG |
| | | | CULG | | | | 2245 | 2245.5 | 3 | | | | IIIB,U |
| | | | LEAR | | | | 2245.0 | 2245.3 | 1 | | | | III |
| | | | PALE | | | | 2245.0 | 2245.3 | 2 | | | | III |
| | | | LEAR | | | | 2301.5 | 2304.0 | 1 | | | | CONT |
| | | | PALE | | | | 2301.6 | 2303.9 | 1 | | | | CONT |
| | | | CULG | 2323 | 2323.5 | 1 | | | | | | | DCIM |
| | | | LEAR | | | | 2326.5 | 2330.3 | 1 | | | | CONT |
| | | | CULG | | | | 2329.5 | 2340 | 2 | 2329.5 | 2340 | 2 | IIIN |
| | | | PALE | | | | 2329.6 | 2339.4 | 1 | | | | CONT |
| | | | LEAR | | | | 2335.6 | 0006.8 | 1 | | | | S |
| 09 | 0000 | 0746 | CULG | 0000 | 0020 | | | | | | | | IS,W |
| | | | CULG | | | | 0003 | 0720 | 1 | 0003 | 0238 | 1 | IIIG,N |
| | | | CULG | | | | 0008 | 0746 | | | | | IIIN,W |
| | | | PALE | | | | 0019.5 | 0022.1 | 1 | | | | CONT |
| | | | CULG | 0020 | 0057 | 1 | | | | | | | IS |
| | | | CULG | | | | 0021 | 0022 | 2 | 0021 | 0021.5 | 2 | IIIG |
| | | | CULG | 0030.5 | 0031 | 1 | 0030.5 | 0032 | 2 | 0030.5 | 0031.5 | 2 | IIIG |
| | | | PALE | | | | 0030.6 | 0031.2 | 1 | | | | III |
| | | | CULG | 0033 | 0716 | 2 | | | | | | | IIIN |
| | | | CULG | | | | 0040 | 0342 | 1 | | | | IS,DC |
| | | | CULG | | | | 0051.5 | 0052 | 3 | 0051.5 | 0052 | 2 | IIIG |
| | | | CULG | 0057 | 0746 | | | | | | | | IS,W |
| | | | LEAR | | | | 0122.0 | 0940.0 | 1 | | | | B |
| | | | CULG | | | | 0218.5 | 0219.5 | 3 | 0219 | 0219.5 | 2 | IIIB |
| | | | CULG | | | | 0237 | 0237.5 | 1 | | | | IIIB,V |
| | | | CULG | 0302 | 0303.5 | 2 | 0300.5 | 0305 | 3 | 0301 | 0304.5 | 2 | IIIGG,V |
| | | | CULG | | | | 0331.5 | 0332 | 3 | 0331.5 | 0332 | 1 | IIIG |
| | | | PALE | | | | 0331.5 | 0332.0 | 2 | | | | III |
| | | | CULG | | | | 0354 | 0355 | 2 | 0354 | 0355 | 1 | IIIB,V |
| | | | PALE | | | | 0354.2 | 0354.5 | 2 | | | | III |
| | | | LEAR | | | | 0712.5 | 0712.9 | 2 | | | | CONT |
| | | | LEAR | | | | 0718.3 | 0725.0 | 3 | | | | CONT |
| | | | WEIS | | | | 0721.2 | 0724.7 | 3 | | | | IIIGG |
| | | | CULG | 0721.5 | 0723 | 2 | 0721.5 | 0723.5 | 3 | | | | IIIG |
| | | | CULG | 0724.5 | 0725 | 1 | 0724.5 | | 2 | | | | IIIB |
| | 0717 | 1555 | WEIS | | | | 0727 | 1548 | | | | | IIIN |
| | | | WEIS | | | | 0728 | 1528 | 2 | | | | IN |
| | 0740 | 1600 | DWIN | 0750.5 | | 2 | | | | | | | IIIB |
| | 0755 | 1530 | BLEN | | | | 0755 E | 1315 | 1 | | | | I,DC |
| | | | DWIN | 0836.0 | 0837.0 | 2 | | | | | | | IIIG |
| | | | BLEN | 0836.2 | 0836.9 | 1 | 0836.2 | 0836.9 | 1 | | | | IIIG |
| | | | DWIN | 0947.5 | 0947.7 | 1 | | | | | | | IIIG |
| | | | BLEN | | | | 1027.4 | 1053.4 | 3 | | | | IIIGG |
| | | | WEIS | | | | 1027.4 | 1032.6 | 3 | | | | IIIGG |
| | | | LEAR | | | | 1027.5 | 1032.0 | 2 | | | | CONT |
| | | | WEIS | | | | 1046.2 | 1054.2 | 3 | | | | IIIGG |
| | | | LEAR | | | | 1047.8 | 1049.5 | 2 | | | | CONT |
| | | | WEIS | | | | 1121.7 | 1123.4 | 3 | | | | IIIG/V |
| | | | BLEN | | | | 1121.7 | 1122.5 | 3 | | | | V |
| | | | SGMR | | | | 1327.3 | 1327.7 | 1 | | | | V |
| | | | SGMR | | | | 1430.7 | 1431.2 | 1 | | | | V |
| | 1600 | 2355 | HARV | | | | 1613 | 2355 | 1 | | | | IN |
| | | | HARV | | | | 1628 | | 2 | 1628 | | 2 | IIIG |
| | | | HARV | | | | 1638 | | 3 | 1638 | | 1 | IIIG |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

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| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 09 | | | HARV | | | | 1805 | 2329 | 2 | 1805 | 2329 | 2 | IIIN |
| | | | PALE | | | | 1805.4 | 1805.6 | 1 | | | | III |
| | | | HARV | | | | 1815 | 1821 | 2 | 1815 | 1821 | 2 | IIIG |
| | | | SGMR | | | | 1817.3 | 1820.6 | 1 | | | | CONT |
| | | | PALE | | | | 1851.9 | 1852.2 | 1 | | | | III |
| | | | HARV | | | | 1852 | | 2 | 1852 | | 2 | IIIG |
| | | | PALE | | | | 2025.7 | 2026.9 | 1 | | | | CONT |
| | | | HARV | | | | 2026 | 2027 | 2 | 2026 | 2027 | 2 | IIIG |
| | | | PALE | | | | 2043.7 | 2044.7 | 1 | | | | III |
| | | | CULG | | | | 2046 | 2400 | | | | | IS,WC |
| | | | CULG | 2046 | 2400 | | | | | | | | IS,W |
| | 2046 | 2400 | CULG | | | | 2046 | 2345 | | | | | IIIS,W |
| | | | CULG | | | | 2048 | 2326 | | | | | N,DP,W |
| | | | HARV | 2051 | 2052 | 1 | 2051 | 2052 | 2 | | | | IIIG |
| | | | CULG | 2051 | 2052 | 1 | | | | | | | IIIG |
| | | | PALE | | | | 2105.6 | 2106.0 | 1 | | | | III |
| | | | CULG | | | | 2134 | 2236 | 1 | | | | N,RS,DP |
| | | | CULG | 2325.5 | 2326 | 2 | | | | | | | DCIM |
| | | | HARV | | | | 2326 | | 2 | | | | IIIG |
| | | | LEAR | | | | 2339.0 | 1049.0 | 1 | | | | B |
| 10 | | | CULG | | | | 0000 | 0746 | | | | | IIIS,W |
| | | | CULG | | | | 0000 | 0746 | 1 | | | | N,DC |
| | 0000 | 0746 | CULG | | | | 0000 | 0746 | | | | | IS,W |
| | | | CULG | | | | 0027 | 0746 | 1 | | | | N,RS,DP |
| | | | CULG | | | | 0128.5 | 0129 | 2 | | | | IIIB,U |
| | | | CULG | 0138.5 | 0139.5 | 1 | 0139 | 0140 | 1 | | | | IIIG,V |
| | | | CULG | | | | 0142 | 0142.5 | 1 | | | | IIIB |
| | | | CULG | 0203 | 0204 | 2 | 0203 | 0205 | 3 | 0203 | 0204.5 | 2 | IIIG,V |
| | | | LEAR | | | | 0203.1 | 0205.3 | 3 | | | | CONT |
| | | | PALE | | | | 0203.2 | 0204.5 | 3 | | | | V |
| | | | CULG | | | | | | | 0204 | 0210 | | SWF,W |
| | | | CULG | 0223 | 0224 | 1 | | | | | | | IIIG |
| | | | CULG | 0242 | 0746 | | | | | | | | IN,W |
| | | | CULG | 0252.5 | 0253 | 3 | 0252.5 | 0253 | 1 | | | | IIIG |
| | | | CULG | 0310 | 0310.5 | 2 | | | | | | | IIIB,U |
| | | | CULG | 0320 | 0321.5 | 1 | 0320.5 | 0321 | 1 | | | | IIIG |
| | | | CULG | 0600 | 0602 | | | | | | | | IIIG |
| | | | CULG | | | | 0634 | 0746 | 1 | | | | IIIN |
| | | | CULG | 0726 | 0727 | 3 | 0726 | 0727.5 | 3 | | | | IIIG,V |
| | | | LEAR | | | | 0726.0 | 0727.8 | 2 | | | | CONT |
| | 0716 | 1159 | WEIS | | | | 0726.1 | 0727.4 | 3 | | | | IIIGG |
| | 1203 | 1557 | WEIS | | | | 0727 | 1522 | 1 | | | | IN |
| | 0755 | 1530 | BLEN | | | | 0755 E | 0810 | 1 | | | | I |
| | | | WEIS | | | | 0759 | 1554 | 2 | | | | IIIN |
| | | | BLEN | | | | 0816.1 | 0816.4 | 1 | | | | IIIG |
| | | | BLEN | | | | 0941.2 | 0943.3 | 2 | | | | IIIG |
| | | | BLEN | | | | 1021.3 | 1022.6 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1021.4 | 1022.9 | 3 | | | | IIIGG |
| | | | LEAR | | | | 1203.1 | 0205.3 | 3 | | | | CONT |
| | 0715 | 1600 | DWIN | 1250.5 | 1251.6 | 1 | | | | | | | IIIG |
| | | | BLEN | | | | 1330.2 | 1330.2 | 1 | | | | IIIB |
| | 1358 | 2355 | HARV | | | | 1628 | 2140 | 1 | | | | IN |
| | | | HARV | | | | 1643 | 2255 | 2 | 1643 | 2139 | 2 | IIIN |
| | | | PALE | | | | 1746.8 | 1748.0 | 1 | | | | CONT |
| | | | HARV | | | | 1747 | 1748 | 3 | 1747 | 1748 | 3 | IIIG |
| | | | PALE | | | | 1757.8 | 1758.1 | 2 | | | | III |
| | | | HARV | | | | 1758 | | 2 | 1758 | | 2 | IIIG |
| | | | HARV | | | | 1822 | | 2 | | | | IIIG |
| | | | HARV | | | | 1842 | 1843 | 2 | 1842 | 1843 | 2 | IIIG |
| | | | SGMR | | | | 1842.5 | 1848.2 | 1 | | | | V |
| | | | PALE | | | | 1842.7 | 1843.0 | 1 | | | | III |
| | | | HARV | | | | 1847 | 1848 | 3 | 1847 | 1848 | 3 | IIIG |
| | | | PALE | | | | 1847.3 | 1848.2 | 2 | | | | III |
| | | | PALE | | | | 1921.0 | 0411.0 | 1 | | | | B |
| | 2046 | 2400 | CULG | 2046 | 2400 | | | | | | | | IS,W |
| | | | CULG | | | | 2046 | 2400 | 1 | | | | IIIS |
| | | | CULG | | | | 2046 | 2400 | 1 | | | | IS,C,DC |
| | | | CULG | | | | 2047 | 2400 | 1 | | | | N,RS,DP |
| | | | CULG | | | | 2139.5 | | 2 | | | | IIIB |

# SOLAR RADIO EMISSION
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| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 10 | | | HARV | | | | 2140 | 2355 | 2 | | | | IC |
| | | | HARV | | | | 2248 | | 2 | | | | IIIG |
| | | | CULG | | | | 2251.5 | 2252 | 1 | | | | IIIG,U |
| | | | LEAR | | | | 2318.5 | 1048.0 | 1 | | | | B |
| 11 | 0000 | 0735 | CULG | 0000 | 0735 | | | | | | | | IS,W |
| | | | CULG | | | | 0000 | 0735 | 1 | | | | IS,DC |
| | | | CULG | | | | 0000 | 0735 | | | | | IIIS,W |
| | | | CULG | | | | 0003 | 0735 | 1 | | | | IIIN |
| | | | CULG | 0024 | 0616 | | | | | | | | IIIN,W |
| | | | CULG | | | | 0044 | 0735 | 1 | | | | N,RS,DP |
| | | | CULG | | | | 0049 | 0052.5 | 1 | 0052 | | 1 | IIIGG |
| | | | CULG | 0100 | 0113 | 1 | 0100 | 0113 | 1 | | | | SCINT |
| | | | CULG | 0122 | 0122.5 | 1 | 0122 | 0122.5 | 1 | | | | IIIG |
| | | | CULG | | | | 0516 | 0525 | 1 | | | | SCINT |
| | | | CULG | | | | 0605 | 0629 | 1 | | | | SCINT |
| | | | CULG | 0610 | 0611.5 | 2 | 0610.5 | 0613 | 3 | | | | IIIG,V |
| | | | LEAR | | | | 0610.6 | 0611.9 | 3 | | | | CONT |
| | 0715 | 1600 | DWIN | | | | | | | | | | |
| | 0714 | 1559 | WEIS | | | | 0722 | 1556 | 2 | | | | IS |
| | | | WEIS | | | | 0722 | 1553 | 1 | | | | IIIN |
| | 0755 | 1530 | BLEN | | | | 0920 | 1530 D | 1 | | | | I,DC |
| | | | BLEN | 1128.4 | 1129.3 | 1 | 1128.4 | 1129.3 | 3 | | | | IIIG |
| | 1358 | 2400 | HARV | | | | 1403 | 2400 | 1 | | | | I |
| | | | HARV | | | | 1716 | 1718 | 2 | | | | IIIG |
| | | | HARV | | | | 1743 | 2320 | 2 | 1743 | 2209 | 2 | IIIN |
| | | | PALE | | | | 1935.9 | 1936.3 | 1 | | | | III |
| | | | HARV | | | | 1936 | | 2 | 1936 | | 2 | IIIB |
| | | | HARV | | | | 2004 | | 2 | 2004 | | 2 | IIIG |
| | | | PALE | | | | 2004.0 | 2004.6 | 1 | | | | III |
| | | | HARV | | | | 2017 | 2018 | 2 | | | | IIIG |
| | | | CULG | | | | 2046 | 2400 | | | | | IIIS,W |
| | 2046 | 2400 | CULG | | | | 2046 | 2400 | 1 | | | | IS,DC |
| | | | CULG | | | | 2048 | 2400 | 1 | | | | IIIN |
| | | | CULG | | | | 2208.5 | 2209 | 2 | | | | IIIG |
| | | | CULG | | | | 2209 | 2400 | 1 | | | | N,RS,DP |
| | | | LEAR | | | | 2340.0 | 1048.0 | 1 | | | | B |
| 12 | 0000 | 0746 | CULG | | | | 0000 | 0746 | 1 | | | | IS,DC |
| | | | CULG | | | | 0000 | 0746 | | | | | IIIS,W |
| | | | CULG | | | | 0007 | 0746 | 1 | | | | N,RS,DP |
| | | | CULG | 0015 | 0746 | | | | | | | | IN,W |
| | | | CULG | 0037 | 0718 | | | | | | | | IIIN,W |
| | | | CULG | | | | 0146 | 0730 | 1 | | | | IIIN |
| | | | CULG | | | | 0146 | 0730 | 1 | | | | IIIN |
| | | | CULG | 0413.5 | 0414 | 2 | 0413.5 | 0414.5 | 2 | | | | IIIG,V |
| | | | CULG | 0428 | 0429 | 2 | | | | | | | IIIG |
| | 0712 | 1437 | WEIS | | | | 0717.6 | 0718.9 | 2 | | | | IIIG,DCIM |
| | | | CULG | | | | 0721 | 0723 | 3 | | | | IIIG,V |
| | | | WEIS | | | | 0721.0 | 0722.2 | 2 | | | | IIIG |
| | | | LEAR | | | | 0721.0 | 0724.0 | 3 | | | | CONT |
| | | | WEIS | | | | 0726.7 | 0727.6 | 1 | | | | IIIG |
| | | | WEIS | | | | 0728 | 1257 | 1 | | | | IN |
| | | | WEIS | | | | 0729.6 | 0729.7 | 1 | | | | IIIB |
| | | | WEIS | | | | 0737.7 | 0743.7 | 1 | | | | IIIG |
| | | | WEIS | | | | 0747.0 | 0747.6 | 1 | | | | IIIG |
| | | | WEIS | | | | 0810.7 | 0810.8 | 1 | | | | IIIB |
| | | | WEIS | | | | 0821.1 | 0821.7 | 1 | | | | IIIB |
| | | | WEIS | | | | 0827.5 | 0827.7 | 1 | | | | IIIB |
| | | | WEIS | | | | 0849.0 | 0849.2 | 1 | | | | IIIB |
| | | | WEIS | | | | 0858.4 | 0858.5 | 1 | | | | IIIB |
| | 0710 | 1304 | DWIN | 1044.2 | 1044.7 | 1 | | | | | | | IIIG |
| | | | DWIN | 1122.1 | 1122.7 | 1 | | | | | | | IIIG |
| | | | WEIS | | | | 1122.3 | 1126.7 | 3 | | | | IIIGG |
| | | | WEIS | | | | 1149.4 | 1150.3 | 1 | | | | IIIG |
| | | | WEIS | | | | 1238.4 | 1245.0 | 3 | | | | IIIGG/V |
| | | | SGMR | | | | 1241.7 | 1244.1 | 1 | | | | V |
| | | | DWIN | 1242.2 | 1245.5 | 1 | | | | | | | IIIG |
| | | | WEIS | | | | 1247.9 | 1250.6 | 1 | | | | IIIG |
| | 0755 | 1530 | BLEN | | | | 1338.3 | 1358.4 | 3 | | | | IIIGG,U |

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| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 12 | | | WEIS | | | | 1338.3 | 1338.8 | 2 | | | | IIIG |
| | | | WEIS | | | | 1341.7 | 1344.7 | 2 | | | | IIIGG,DCIM |
| | | | WEIS | | | | 1353.7 | 1354.2 | 2 | | | | IIIG |
| | | | WEIS | | | | 1357.0 | 1358.9 | 3 | | | | IIIGG |
| | 1401 | 2400 | HARV | | | | 1401 | 1900 | 1 | | | | INW |
| | 1441 | 1600 | WEIS | | | | 1531.2 | 1531.3 | 1 | | | | IIIB |
| | | | WEIS | | | | 1553.4 | 1553.5 | 1 | | | | IIIB |
| | | | WEIS | | | | 1554.5 | 1554.6 | 1 | | | | IIIB |
| | | | HARV | | | | 1654 | 2348 | 2 | 1654 | | 2 | IIIN |
| | | | HARV | | | | 1710 | 1711 | 2 | 1710 | 1711 | 2 | IIIG,U |
| | 2046 | 2400 | CULG | 2102 | 2400 | | | | | | | | IN,W |
| | | | CULG | | | | 2104 | 2400 | | | | | IIIN,W |
| | | | CULG | | | | 2107 | 2110 | 2 | | | | IIIG,U |
| | | | HARV | | | | 2107 | 2109 | 2 | 2108 | 2109 | 2 | IIIG |
| | | | CULG | | | | 2134 | 2348 | 1 | | | | IIIN |
| | | | CULG | | | | 2137 | | 2 | | | | IIIB |
| | | | CULG | | | | 2249.5 | | | 2249.5 | | | IIIB,W |
| | | | HARV | | | | 2334 | 2338 | 3 | | | | IIIGG,U |
| | | | LEAR | | | | 2335.3 | 2338.2 | 1 | | | | CONT |
| | | | CULG | 2336.5 | 2337.5 | 1 | 2337 | 2338 | 2 | | | | IIIG |
| | | | PALE | | | | 2337.4 | 2338.1 | 1 | | | | CONT |
| | | | HARV | | | | 2341 | 2342 | 3 | | | | IIIG |
| | | | HARV | | | | 2352 | | 3 | 2352 | | 2 | IIIB |
| | | | CULG | | | | 2352 | 2353 | 3 | 2352.5 | 2353 | 2 | IIIB,V |
| | | | LEAR | | | | 2352.2 | 2353.0 | 2 | | | | V |
| | | | PALE | | | | 2352.3 | 2352.9 | 2 | | | | III |
| 13 | 0000 | 0746 | CULG | | | | 0000.0 | 46 | | | | | IIIN,W |
| | | | CULG | | | | 0008 | 0710 | 1 | | | | IIIN |
| | | | LEAR | | | | 0009.3 | 0015.7 | 1 | | | | CONT |
| | | | CULG | 0014 | 0025 | | | | | | | | IIIN,W |
| | | | CULG | | | | | | | 0019 | 0331 | | IIIN,W |
| | | | LEAR | | | | 0046.3 | 0046.5 | 1 | | | | III |
| | | | CULG | 0100 | 0104.5 | 1 | 0101 | 0102.5 | 3 | | | | IIIG,V,U |
| | | | PALE | | | | 0101.0 | 0102.1 | 2 | | | | V |
| | | | LEAR | | | | 0101.1 | 0102.6 | 2 | | | | CONT |
| | | | LEAR | | | | 0118.3 | 0128.7 | 1 | | | | S |
| | | | CULG | | | | 0128.5 | 0129.5 | 1 | 0128.5 | 0129.5 | 1 | IIIG |
| | | | LEAR | | | | 0233.1 | 0233.5 | 1 | | | | CONT |
| | | | LEAR | | | | 0248.6 | 0330.8 | 1 | | | | S |
| | | | CULG | | | | 0407.5 | 0409 | 2 | | | | IIIG |
| | | | LEAR | | | | 0407.8 | 0409.1 | 1 | | | | CONT |
| | | | CULG | | | | | | | 0416 | 0425 | | SWF,W |
| | | | LEAR | | | | 0501.0 | 0508.2 | 1 | | | | CONT |
| | | | CULG | | | | 0507.5 | | 2 | | | | IIIB,U |
| | | | LEAR | | | | 0634.5 | 0725.3 | 1 | | | | S |
| | 0710 | 1215 | DWIN | | | | | | | | | | |
| | 0710 | 1602 | WEIS | | | | 0728 | 0935 | 1 | | | | IN |
| | | | WEIS | | | | 0836.7 | 0838.8 | 2 | | | | IIIG |
| | | | LEAR | | | | 0836.8 | 0839.2 | 2 | | | | CONT |
| | | | LEAR | | | | 0918.9 | 0919.3 | 1 | | | | III |
| | | | LEAR | | | | 0956.8 | 0957.4 | 1 | | | | III |
| | | | WEIS | | | | 0956.9 | 0958.2 | 1 | | | | IIIG |
| | | | WEIS | | | | 1032.4 | 1033.8 | 1 | | | | DCIM |
| | | | WEIS | | | | 1101.3 | 1104.2 | 2 | | | | IIIG |
| | | | WEIS | | | | 1106.7 | 1106.8 | 1 | | | | IIIB |
| | 1300 | 1600 | DWIN | | | | | | | | | | |
| | | | WEIS | | | | 1319.8 | 1320.3 | 1 | | | | IIIG |
| | | | WEIS | | | | 1324.8 | 1325.0 | 1 | | | | IIIG |
| | 0755 | 1428 | BLEN | | | | 1330.1 | 1330.5 | 1 | | | | IIIG |
| | | | WEIS | | | | 1330.3 | 1331.3 | 3 | | | | IIIGG |
| | | | SGMR | | | | 1330.5 | 1331.0 | 1 | | | | CONT |
| | 1401 | 2400 | HARV | | | | 1403 | 1500 | 1 | | | | IN |
| | | | HARV | | | | 1500 | 2334 | 2 | 1826 | 1849 | 1 | IIIN |
| | | | WEIS | | | | 1512.8 | 1514.9 | 2 | | | | IIIG |
| | | | SGMR | | | | 1527.5 | 1528.3 | 1 | | | | CONT |
| | | | WEIS | | | | 1527.6 | 1528.0 | 3 | | | | IIIG |
| | | | HARV | | | | 1528 | | 2 | 1528 | | 1 | IIIG |
| | | | HARV | | | | 2119 | | 3 | | | | IIIG |
| | 2046 | 2400 | CULG | 2119 | 2400 | 1 | | | | | | | IIIN |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 13 | | | CULG | | | | 2334 | | 1 | | | | IIIB |
| | | | PALE | | | | 2337.4 | 2338.1 | 1 | | | | CONT |
| | | | PALE | | | | 2352.3 | 2352.9 | 2 | | | | III |
| 14 | 0000 | 0746 | CULG | | | | 0000 | 0746 | | | | | IIIN,W |
| | | | CULG | | | | 0026 | 0026.5 | 1 | | | | IIIB,U |
| | | | CULG | 0028 | 0746 | 1 | | | | | | | IIIN |
| | | | CULG | 0319 | 0321.5 | 2 | 0319.5 | 0320 | 1 | | | | IIIGG |
| | | | CULG | 0333 | 0333.5 | 2 | 0333 | 0333.5 | 1 | | | | IIIG |
| | | | LEAR | | | | 0334.9 | 0335.9 | 2 | | | | III |
| | | | CULG | | | | 0335 | 0336 | 2 | 0335 | 0335.5 | 2 | IIIG |
| | | | CULG | | | | 0446.5 | 0447 | 1 | | | | IIIG |
| | | | LEAR | | | | 0446.7 | 0447.2 | 1 | | | | CONT |
| | | | CULG | | | | | | | 0528.5 | | 1 | IIIB |
| | | | CULG | 0546 | 0546.5 | 3 | 0546 | 0546.5 | 2 | | | | IIIG |
| | | | CULG | 0547 | 0547.5 | 3 | 0547 | | 1 | | | | IIIG,U |
| | | | LEAR | | | | 0717.5 | 0912.5 | 1 | | | | B |
| | | | CULG | | | | 0719.5 | 0728 | | | | | POSSII,W |
| | 0710 | 1604 | WEIS | | | | 0732.4 | 0732.6 | 1 | | | | U |
| | | | WEIS | | | | 0754.5 | 0755.4 | 2 | | | | IIIG |
| | | | WEIS | | | | 0800.7 | 0801.6 | 1 | | | | IIIG |
| | | | LEAR | | | | 0837.0 | 0857.3 | 1 | | | II | |
| | | | WEIS | | | | 0837.3 | 0848.0 | 2 | | | II | HARM |
| | | | WEIS | | | | 0936.2 | 0936.3 | 1 | | | | IIIB |
| | | | WEIS | | | | 1040.3 | 1040.5 | 1 | | | | IIIB |
| | | | WEIS | | | | 1124.3 | 1124.4 | 1 | | | | IIIB |
| | | | WEIS | | | | 1151.8 | 1151.4 | 1 | | | | IIIB |
| | 1401 | 2400 | HARV | | | | 1406 | 2400 | 1 | | | | INW |
| | | | HARV | | | | 1438 | 2331 | 1 | | | | IIIN |
| | | | HARV | 1601 | 1604 | 1 | 1601 | 1604 | 3 | | | | IIIGG,U |
| | | | WEIS | | | | 1601.3 | 1603.1 | 2 | | | | IIIGG,DCIM |
| | 0710 | 1605 | DWIN | 1602.0 | 1603.8 | 1 | | | | | | | IIIG |
| | | | HARV | | | | 1617 | 1619 | 2 | 1617 | 1618 | 1 | IIIG |
| | | | HARV | | | | 1810 | 1812 | 2 | | | | IIIG |
| | 2046 | 2400 | CULG | | | | 2046 | 2400 | | | | | IIIN,W |
| | | | CULG | | | | 2049 | 2104 | 2 | | | | POSSII |
| | | | CULG | | | | 2052 | 2052.5 | 1 | | | | IIIG |
| | | | CULG | 2127 | | 2 | | | | | | | IIIB |
| | | | CULG | 2130 | 2400 | | | | | | | | IS,W |
| | | | CULG | | | | 2203 | | 1 | | | | IIIB |
| | | | CULG | | | | 2215 | 2313 | | | | | IN,W |
| | | | LEAR | | | | 2330.5 | 2330.9 | 1 | | | | CONT |
| 15 | 0000 | 0746 | CULG | 0000 | 0746 | | 0000 | 0746 | | | | | IN,W |
| | | | CULG | | | | 0009 | 0746 | | | | | IIIN,W |
| | | | CULG | 0036 | 0036.5 | 2 | 0036 | 0037 | 3 | 0036.5 | 0037 | 1 | IIIG,V |
| | | | LEAR | | | | 0036.3 | 0037.2 | 2 | | | | CONT |
| | | | PALE | | | | 0036.4 | 0037.0 | 2 | | | | V |
| | | | CULG | | | | 0207 | 0207.5 | 1 | | | | IIIG |
| | | | LEAR | | | | 0207.2 | 0207.6 | 1 | | | | CONT |
| | | | LEAR | | | | 0214.5 | 0215.1 | 1 | | | | CONT |
| | | | LEAR | | | | 0400.0 | 0400.7 | 1 | | | | CONT |
| | | | CULG | | | | 0455 | | 1 | 0455 | | 1 | IIIB |
| | | | LEAR | | | | 0455.0 | 0455.3 | 1 | | | | CONT |
| | | | LEAR | | | | 0512.9 | 0513.1 | 1 | | | | III |
| | | | CULG | | | | 0535 | 0724 | 1 | | | | IIIN |
| | | | LEAR | | | | 0538.7 | 0539.1 | 1 | | | | CONT |
| | | | CULG | | | | 0641 | | 3 | | | | IIIB |
| | | | LEAR | | | | 0641.1 | 0643.3 | 1 | | | | CONT |
| | | | CULG | 0642 | 0716 | 2 | | | | | | | IIIN |
| | 0704 | 1600 | DWIN | | | | | | | | | | |
| | | | LEAR | | | | 0708.4 | 0709.0 | 2 | | | | CONT |
| | | | CULG | 0708.5 | 0710 | 1 | 0708.5 | 0710 | 2 | | | | IIIG |
| | 0707 | 0748 | WEIS | | | | 0712.1 | 0715.7 | 2 | | | | IIIG,DCIM |
| | | | LEAR | | | | 0714.0 | 0723.5 | 1 | | | | CONT |
| | | | WEIS | | | | 0722.1 | 0723.5 | 2 | | | | IIIG |
| | | | LEAR | | | | 0802.4 | 0809.5 | 1 | | | | CONT |
| | 0755 | 1605 | WEIS | | | | 0805.9 | 0806.6 | 2 | | | | IIIG |
| | | | WEIS | | | | 0808.3 | 0809.5 | 1 | | | | IIIG |
| | | | WEIS | | | | 0833.3 | 0833.6 | 1 | | | | IIIG |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | | | LEAR | | | | 0833.3 | 0833.5 | 1 | | | | III |
| | | | WEIS | | | | 0848.6 | 0848.8 | 1 | | | | IIIG |
| | | | WEIS | | | | 0914.4 | 0914.6 | 1 | | | | IIIB |
| | | | WEIS | | | | 1036.9 | 1037.1 | 1 | | | | IIIB |
| | | | WEIS | | | | 1038.4 | 1038.5 | 1 | | | | IIIB |
| | | | WEIS | | | | 1148.7 | 1148.9 | 2 | | | | IIIB |
| | | | WEIS | | | | 1201.1 | 1201.9 | 2 | | | | IIIG |
| | | | WEIS | | | | 1203.9 | 1209.2 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1257.3 | 1259.3 | 2 | | | | IIIG |
| | | | WEIS | | | | 1304.9 | 1305.9 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1310.2 | 1313.7 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1326.2 | 1326.3 | 1 | | | | IIIB |
| | | | WEIS | | | | 1329.2 | 1330.1 | 3 | | | | IIIGG |
| | | | SGMR | | | | 1357.8 | 1402.2 | 1 | | | | CONT |
| | | | WEIS | | | | 1358.1 | 1405.6 | 3 | | | | IIIGG |
| | 1402 | 2400 | HARV | | | | 1402 | 1405 | 3 | | | | IIIGG |
| | | | HARV | | | | 1402 | 2410 | 1 | | | | IN |
| | | | HARV | | | | 1416 | 2048 | 1 | | | | IIIN |
| | | | WEIS | | | | 1420.6 | 1421.6 | 2 | | | | IIIG,U |
| | | | HARV | | | | 1421 | 1422 | 3 | | | | IIIG |
| | | | HARV | | | | 1432 | | 2 | | | | IIIG |
| | | | WEIS | | | | 1432.0 | 1432.5 | 2 | | | | IIIG |
| | | | WEIS | | | | 1510.1 | 1511.6 | 2 | | | | IIIG |
| | | | HARV | | | | 1514 | 1517 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1514.4 | 1520.3 | 2 | | | | IIIGG |
| | | | HARV | 1820 | | 1 | 1820 | 1825 | 2 | 1820 | 1825 | 2 | IIIGG |
| | | | PALE | | | | 1821.5 | 1822.3 | 1 | | | | III |
| | | | HARV | | | | 1900 | 1922 | 3 | 1904 | 1927 | 2 | II |
| | | | PALE | | | | 1901.9 | 1929.0 | 1 | | | | II |
| | | | SGMR | | | | 1906.4 | 1910.1 | 1 | | | | IV |
| | | | HARV | | | | 1950 | 1951 | 2 | 1951 | | 1 | IIIG |
| | | | HARV | 2032 | 2033 | 1 | 2032 | 2033 | 2 | | | | IIIG,U |
| | | | CULG | | | | 2051 | 2400 | | | | | IIIN,W |
| | 2051 | 2400 | CULG | 2051 | 2315 | | 2051 | 2130 | | | | | IS,W |
| | | | CULG | | | | 2111 | | 1 | | | | IIIB |
| | | | CULG | | | | 2130 | 2301 | | | | | IN,W |
| | | | CULG | | | | 2144 | 2151 | 1 | | | | N,RS,DP |
| | | | HARV | | | | 2234 | | 2 | | | | IIIG |
| | | | CULG | | | | 2234 | | 2 | | | | IIIB |
| | | | CULG | | | | 2244.5 | | 1 | | | | IIIB |
| | | | CULG | 2315 | 2400 | 1 | | | | | | | IS |
| | | | CULG | | | | 2343.5 | | 1 | | | | IIIB |
| | | | LEAR | | | | 2343.6 | 2343.8 | 1 | | | | III |
| 16 | | | CULG | | | | 0000 | 0746 | | | | | IIIS,W |
| | 0000 | 0746 | CULG | 0000 | 0746 | 1 | | | | | | | IS |
| | | | CULG | | | | 0000 | 0044 | | | | | IN,W |
| | | | CULG | | | | 0013 | 0034 | 1 | | | | IIIN |
| | | | LEAR | | | | 0013.4 | 0129.5 | 1 | | | | B |
| | | | CULG | | | | 0055 | 0641 | 1 | | | | N,RS,DP |
| | | | LEAR | | | | 0301.2 | 0301.4 | 1 | | | | CONT |
| | | | LEAR | | | | 0346.2 | 0346.3 | 1 | | | | III |
| | | | CULG | | | | 0417.5 | | 1 | | | | IIIB |
| | | | LEAR | | | | 0418.7 | 0419.1 | 1 | | | | CONT |
| | | | CULG | | | | 0419 | | 1 | | | | IIIB |
| | | | LEAR | | | | 0638.0 | 1045.0 | 1 | | | | B |
| | 0706 | 1607 | WEIS | | | | 0709 | 1607 | 2 | | | | IS,DC |
| | | | WEIS | | | | 0806.2 | 0806.3 | 1 | | | | IIIB |
| | | | WEIS | | | | 0810.3 | 0810.4 | 1 | | | | IIIB |
| | | | WEIS | | | | 0817.2 | 0817.3 | 1 | | | | IIIB |
| | | | WEIS | | | | 0851.4 | 0851.5 | 2 | | | | IIIB |
| | | | WEIS | | | | 0926.4 | 0926.7 | 1 | | | | IIIG |
| | | | WEIS | | | | 1009 | 1607 | 2 | | | | IIIN,DP |
| | 0725 | 1610 | DWIN | 1215.5 | 1217.0 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1217.8 | 1220.2 | 3 | | | | IIIGG |
| | | | DWIN | 1218.7 | 1218.9 | 1 | | | | | | | IIIG |
| | 1401 | 2400 | HARV | | | | 1410 | 1740 | 2 | | | | I |
| | | | HARV | | | | 1501 | 2325 | 2 | | | | IIIN |
| | | | WEIS | | | | 1507.8 | 1509.9 | 3 | | | | IIIGG |
| | | | HARV | 1509 | 1510 | 1 | 1508 | 1510 | 3 | 1509 | | 1 | IIIG |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | | | SGMR | | | | 1509.0 | 1509.4 | 1 | | | | III |
| | | | HARV | | | | | | | 1644 | 1953 | 1 | IIIN |
| | | | HARV | | | | 1714 | 1716 | 3 | 1714 | 1716 | 2 | IIIGG |
| | | | SGMR | | | | 1714.3 | 1715.5 | 1 | | | | CONT |
| | | | HARV | | | | 1727 | 1729 | 2 | 1727 | 1729 | 2 | IIIG |
| | | | PALE | | | | 1734.9 | 1736.7 | 2 | | | | V |
| | | | HARV | | | | 1735 | 1739 | 3 | 1735 | 1739 | 3 | IIIG,V |
| | | | SGMR | | | | 1735.0 | 1737.2 | 2 | | | | V |
| | | | HARV | | | | 1740 | 2140 | 3 | | | | IC |
| | | | HARV | | | | 1755 | 1757 | 2 | 1755 | 1757 | 2 | IIIGG |
| | | | CULG | | | | 2047 | 2115 | | | | | IIIS,W |
| | | | CULG | | | | 2047 | 2210 | 1 | | | | IS,DC |
| | 2047 | 2400 | CULG | 2047 | 2400 | | | | | | | | IS,W |
| | | | HARV | | | | 2109 | 2110 | 2 | 2109 | 2110 | 2 | IIIG |
| | | | CULG | | | | 2109 | 2110 | 2 | | | | IIIG |
| | | | CULG | | | | 2115 | 2400 | | | | | IIIN,W |
| | | | CULG | | | | 2139.5 | | | | | | RS,DP,W |
| | | | HARV | | | | 2140 | 2400 | 2 | | | | I |
| | | | CULG | | | | 2210 | 2400 | | | | | IS,W |
| | | | CULG | 2227.5 | 2228 | | | | | | | | IIIG,W |
| | | | LEAR | | | | 2325.2 | 2325.3 | 1 | | | | III |
| 17 | | | CULG | | | | 0000 | 0235 | 1 | | | | IS,DC |
| | 0000 | 0746 | CULG | 0000 | 0200 | | | | | | | | IN,W |
| | | | CULG | 0019.5 | | 1 | | | | | | | IIIB |
| | | | LEAR | | | | 0030.8 | 1045.0 | 1 | | | | B |
| | | | CULG | | | | 0031 | 0746 | | | | | IIIN,W |
| | | | CULG | | | | 0110 | 0712 | | | | | N,RS,DP,W |
| | | | CULG | 0200 | 0535 | | | | | | | | IS,W |
| | | | CULG | | | | 0212 | 0212.5 | 1 | 0212.5 | | 1 | IIIG |
| | | | CULG | | | | 0235 | 0500 | | | | | IS,W |
| | | | CULG | | | | 0546.5 | 0547 | 2 | 0546.5 | 0547 | 2 | IIIG |
| | | | LEAR | | | | 0546.6 | 0547.2 | 2 | | | | CONT |
| | | | CULG | | | | 0657.5 | 0658 | 1 | | | | IIIG |
| | | | CULG | | | | 0719 | 0720 | 2 | | | | IIIG |
| | | | WEIS | | | | 0719.2 | 0720.9 | 2 | | | | IIIGG |
| | | | LEAR | | | | 0719.2 | 0721.1 | 2 | | | | CONT |
| | | | CULG | 0738 | 0746 | | | | | | | | IS,W |
| | 0740 | 1605 | DWIN | | | | | | | | | | |
| | 0703 | 0949 | WEIS | | | | 0740 | 1548 | 1 | | | | IN |
| | 0953 | 1609 | WEIS | | | | 0749 | 1608 | 1 | | | | IIIN |
| | 1402 | 2400 | HARV | | | | 1452 | | 1 | | | | IIIG,U |
| | | | HARV | | | | 1459 | 1516 | 1 | | | | IN |
| | | | HARV | | | | 1510 | 2259 | 1 | | | | IIIN |
| | | | HARV | | | | 1520 | 1522 | 2 | | | | IIIB |
| | | | HARV | | | | 1805 | | 2 | 1805 | | 2 | IIIB |
| | | | HARV | | | | 1834 | 1838 | 2 | 1834 | 1838 | 2 | IIIG |
| | | | PALE | | | | 1834.7 | 1835.5 | 1 | | | | III |
| | | | HARV | | | | 1850 | | 1 | 1850 | | 2 | IIIG |
| | | | HARV | | | | 1906 | 2400 | 1 | | | | I |
| | | | HARV | | | | 1908 | | 1 | 1908 | | 1 | IIIG |
| | | | CULG | | | | 2046 | 2300 | | | | | IS,W,DC |
| | | | CULG | | | | 2046 | 2400 | | | | | IIIN,W |
| | 2046 | 2400 | CULG | 2046 | 2400 | | | | | | | | IS,W |
| | | | PALE | | | | 2146.4 | 2153.5 | 2 | | | | CONT |
| | | | CULG | 2146.5 | 2149.5 | 2 | 2146.5 | 2150 | 1 | | | | IIIGG |
| | | | HARV | 2147 | 2153 | 2 | 2147 | 2150 | 2 | 2147 | 2150 | 1 | IIIGG |
| | | | CULG | | | | | | | 2148 | 2205 | 1 | SWF |
| | | | HARV | | | | 2151 | 2209 | 3 | 2158 | 2209 | 2 | II |
| | | | CULG | 2152.5 | 2157.5 | 2 | 2152.5 | 2214 | 3 | | | | II |
| | | | CULG | | | | 2209 | | 1 | | | | IIIB |
| | | | CULG | | | | 2215.5 | | 1 | | | | IIIB |
| | | | LEAR | | | | 2357.8 | 2359.8 | 1 | | | | CONT |
| 18 | | | CULG | | | | 0000 | 0746 | | | | | IN,W |
| | | | CULG | | | | 0000 | 0746 | | | | | IIIN,W |
| | 0000 | 0746 | CULG | 0000 | 0200 | | | | | | | | IS,W |
| | | | CULG | 0256.5 | 0257 | 1 | 0256.5 | 0257 | 1 | | | | IIIG |
| | | | LEAR | | | | 0344.5 | 1043.0 | 1 | | | | B |
| | | | CULG | 0442 | 0442.5 | 1 | | | | | | | IIIG |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 18 | | | CULG | | | | 0516 | 0729 | 1 | | | | N,RS,DP |
| | | | LEAR | | | | 0523.5 | 0524.8 | 2 | | | | CONT |
| | | | CULG | 0544.5 | | | | | | | | | IIIB,W |
| | | | CULG | 0553.5 | 0554 | 1 | 0553.5 | 0554.5 | 3 | 0553.5 | 0554 | 1 | IIIG |
| | 0701 | 1611 | WEIS | | | | 0728.3 | 0728.4 | 1 | | | | IIIB |
| | | | WEIS | | | | 0741.3 | 0741.4 | 1 | | | | IIIB |
| | 0700 | 1605 | DWIN | 0806.5 | 0808.3 | 1 | | | | | | | IIIG |
| | | | DWIN | 0810.5 | 0811.1 | 1 | | | | | | | IIIG |
| | | | DWIN | 0823.3 | 0823.5 | 1 | | | | | | | IIIG |
| | | | WEIS | | | | 0850.8 | 0852.0 | 1 | | | | IIIG |
| | | | DWIN | 0934.9 | 0937.5 | 1 | | | | | | | IIIG |
| | | | DWIN | 0938.4 | 0938.8 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 0957.3 | 0957.7 | 1 | | | | IIIG |
| | | | DWIN | 1017.5 | 1018.5 | 1 | | | | | | | IIIG |
| | | | DWIN | 1026.1 | 1027.6 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1100.3 | 1102.1 | 1 | | | | IIIG |
| | | | WEIS | | | | 1113.7 | 1113.8 | 1 | | | | IIIB |
| | | | WEIS | | | | 1127.7 | 1128.3 | 1 | | | | IIIG |
| | | | WEIS | | | | 1134.7 | 1134.8 | 1 | | | | IIIB |
| | | | WEIS | | | | 1136.7 | 1137.3 | 2 | | | | IIIG |
| | | | WEIS | | | | 1206.8 | 1206.9 | 1 | | | | IIIB |
| | | | WEIS | | | | 1208.4 | 1208.5 | 1 | | | | IIIG |
| | | | WEIS | | | | 1215.6 | 1218.6 | 1 | | | | IIIG |
| | | | WEIS | | | | 1224.1 | 1224.2 | 1 | | | | IIIB |
| | | | DWIN | 1334.0 | 1334.4 | 1 | | | | | | | IIIG |
| | | | DWIN | 1337.7 | 1339.3 | 2 | | | | | | | IIIG |
| | | | DWIN | 1351.5 | 1352.0 | 1 | | | | | | | IIIG |
| | | | DWIN | 1356.9 | 1400.1 | 2 | | | | | | | IIIG |
| | 1402 | 2400 | HARV | | | | 1410 | 2300 | 1 | | | | INW |
| | | | HARV | | | | 1454 | 1456 | 2 | | | | IIIGG |
| | | | WEIS | | | | 1454.4 | 1456.2 | 2 | | | | IIIG |
| | | | DWIN | 1456.5 | 1456.6 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1509.6 | 1509.7 | 1 | | | | IIIB |
| | | | WEIS | | | | 1519.9 | 1520.5 | 1 | | | | IIIG |
| | | | WEIS | | | | 1540.1 | 1541.6 | 1 | | | | IIIG |
| | | | DWIN | 1542.5 | 1542.6 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1547.7 | 1550.4 | 2 | | | | IIIG |
| | | | HARV | | | | 1550 | 1942 | 1 | 1839 | 1942 | 1 | IIINW |
| | | | HARV | | | | 2038 | | 2 | | | | IIIG |
| | 2046 | 2400 | CULG | 2130 | 2400 | | | | | | | | IN,W |
| | | | CULG | | | | 2159.5 | | 1 | | | | RS,DP |
| | | | CULG | 2235 | 2235.5 | 2 | | | | | | | IIIG |
| 19 | 0000 | 0746 | CULG | 0000 | 0135 | 1 | | | | | | | IS |
| | | | CULG | | | | | | | 0252 | 0315 | | SWF,W |
| | | | CULG | 0255 | 0256 | 1 | | | | | | | UNCLF |
| | | | CULG | | | | 0325 | 0355 | | | | | IIIN,W |
| | | | CULG | | | | 0329 | | 1 | | | | IIIB |
| | | | LEAR | | | | 0329.2 | 0344.5 | 1 | | | | S |
| | | | CULG | | | | | | | 0334 | 0435 | 2 | SWF |
| | | | CULG | 0336 | 0420 | 2 | | | | | | IV | |
| | | | LEAR | | | | 0344.5 | 1043.0 | 1 | | | | B |
| | | | CULG | | | | 0344.5 | 0345.5 | 2 | | | | IIIG |
| | | | CULG | | | | 0345 | 0356 | 1 | | | | POSSII |
| | | | CULG | | | | 0536 | | | | | | RS,DP,W |
| | 0703 | 1135 | WEIS | | | | 0726.8 | 0727.3 | 1 | | | | IIIG |
| | | | CULG | 0727 | 0727.5 | | 0727 | 0727.5 | | | | | IIIG,W |
| | 0805 | 1605 | DWIN | | | | | | | | | | |
| | 1139 | 1612 | WEIS | | | | | | | | | | |
| | 1402 | 2400 | HARV | | | | 1435 | 1445 | 1 | | | | INW |
| | 2046 | 2400 | CULG | 2046 | 2400 | | | | | | | | IN,W |
| | | | HARV | | | | 2125 | 2248 | 1 | | | | INW |
| 20 | 0000 | 0746 | CULG | | | | 0629.5 | | | | | | IIIB,W |
| | | | CULG | 0640.5 | 0641 | 1 | | | | | | | IIIG |
| | | | CULG | | | | | | | 0642 | 0702 | 3 | SWF |
| | | | CULG | 0643 | 0736 | | | | | | | | IS,W |
| | | | LEAR | | | | 0700.3 | 0718.5 | 1 | | | II | |
| | | | CULG | | | | 0708 | 0718 | | | | | POSSII,W |
| | | | LEAR | | | | 0727.0 | 0932.0 | 1 | | | | B |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

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| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 20 | 0659 | 1614 | WEIS | | | | 0744.3 | 0744.5 | 2 | | | | IIIB |
| | | | CULG | | | | 0744.5 | | 1 | | | | IIIB |
| | 0655 | 0925 | DWIN | 0753.9 | 0755.8 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 0910.6 | 0910.8 | 1 | | | | IIIB |
| | | | WEIS | | | | 1127 | 1614 | 1 | | | | IN |
| | 1402 | 2400 | HARV | | | | 1402 | 1550 | 1 | | | | IN |
| | | | HARV | | | | 1550 | 1700 | 3 | | | | I |
| | | | HARV | | | | 1700 | 2135 | 1 | | | | INW |
| | 2046 | 2400 | CULG | 2120 | 2150 | | | | | | | | IS,W |
| 21 | 0000 | 0658 | CULG | | | | 0157 | 0158 | | | | | IIIG,W |
| | 0656 | 1304 | WEIS | | | | 0742.4 | 0742.6 | 2 | | | | IIIB |
| | 0655 | 1605 | DWIN | 1033.5 | 1034.5 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1300.7 | 1301.1 | 1 | | | | IIIG |
| | 1312 | 1616 | WEIS | | | | 1318.2 | 1318.3 | 1 | | | | IIIB |
| | | | WEIS | 1349.2 | 1349.8 | 1 | | | | | | | IIIG |
| | 1402 | 2400 | HARV | | | | 1411 | 2320 | 1 | | | | INW |
| | | | WEIS | | | | 1552.7 | 1552.8 | 1 | | | | IIIB |
| | | | HARV | 1632 | 2400 | 2 | | | | | | | IIIN |
| | | | HARV | 1700 | 1701 | 3 | 1701 | | 1 | | | | IIIG |
| | | | HARV | 1707 | 1708 | 3 | | | | | | | IIIG |
| | | | HARV | 2003 | 2008 | 3 | 2003 | 2008 | 3 | | | | IIIGG |
| | 2046 | 2400 | CULG | | | | | | | | | | |
| | | | HARV | 2203 | 2209 | 3 | 2204 | | 2 | | | | IIIGG |
| | | | HARV | 2222 | | 3 | | | | | | | IIIG |
| | | | HARV | 2229 | 2230 | 3 | | | | | | | IIIG |
| 22 | 0000 | 0745 | CULG | 0040 | 0745 | | | | | | | | IN,W |
| | | | CULG | | | | 0137 | 0300 | | | | | IS,W |
| | | | CULG | 0431.5 | 0432 | | | | | | | | IIIG,W |
| | | | CULG | | | | 0643.5 | 0644 | 1 | | | | IIIG,U |
| | 0650 | 1605 | DWIN | | | | | | | | | | |
| | 0654 | 1617 | WEIS | | | | 0715 | 1536 | 2 | | | | IN |
| | 1402 | 2400 | HARV | | | | 1402 | 1426 | 2 | | | | I |
| | | | HARV | | | | 1426 | 1755 | 1 | | | | IN |
| | | | WEIS | | | | 1429.7 | 1437.3 | 2 | | | | IIIG |
| | | | WEIS | | | | 1613.7 | 1616.0 | 2 | | | | IIIG |
| | | | HARV | | | | 1614 | 1616 | 2 | | | | IIIG |
| | | | HARV | | | | 1755 | 1920 | 2 | | | | I |
| | | | HARV | 1849 | | 1 | 1848 | 1849 | 3 | | | | IIIG |
| | | | HARV | | | | 1920 | 2400 | 1 | | | | IN |
| | 2046 | 2400 | CULG | | | | 2046 | 2110 | 1 | | | | IS |
| | | | CULG | 2136 | 2400 | | | | | | | | IN,W |
| | | | HARV | 2159 | | 2 | | | | | | | IIIG |
| 23 | 0000 | 0746 | CULG | 0101 | 0746 | | | | | | | | IN,W |
| | | | CULG | | | | 0311.5 | 0313 | 2 | 0312 | 0313 | 2 | IIIG,V |
| | | | LEAR | | | | 0311.9 | 0313.2 | 2 | | | | CONT |
| | | | PALE | | | | 0312.2 | 0312.6 | 1 | | | | III |
| | | | CULG | 0551 | 0552 | 1 | 0551 | 0552 | 1 | | | | IIIG |
| | | | LEAR | | | | 0551.4 | 0552.2 | 1 | | | | CONT |
| | | | LEAR | | | | 0654.1 | 0700.2 | 1 | | | | CONT |
| | | | CULG | 0657 | 0710 | 1 | | | | | | | IIIN |
| | 0652 | 1415 | WEIS | | | | 0657.9 | 0658.8 | 2 | | | | IIIG |
| | | | CULG | | | | 0658 | 0659.5 | 1 | | | | IIIG |
| | | | CULG | | | | 0704 | 0725 | 1 | | | II | |
| | | | LEAR | | | | 0704.8 | 0713.8 | 1 | | | II | |
| | | | CULG | | | | 0713 | 0734 | | | | | IS,W |
| | | | LEAR | | | | 0721.9 | 0725.0 | 1 | | | | CONT |
| | 0751 | 1610 | DWIN | | | | | | | | | | |
| | | | LEAR | | | | 0811.7 | 0815.3 | 1 | | | | CONT |
| | | | WEIS | | | | 1003.9 | 1013.0 | 2 | | | | IIIG |
| | | | WEIS | | | | 1309.4 | 1310.0 | 2 | | | | IIIG |
| | 1402 | 2400 | HARV | | | | 1410 | 1515 | 1 | | | | IN |
| | | | HARV | | | | 1515 | 2040 | 2 | | | | I |
| | | | HARV | | | | 1538 | | 2 | | | | IIIG |
| | 1422 | 1618 | WEIS | | | | 1538.2 | 1538.4 | 2 | | | | IIIG |
| | | | HARV | | | | 2040 | 2220 | 3 | | | | I |
| | | | CULG | | | | 2046 | 2130 | | | | | IS,W |
| | 2046 | 2400 | CULG | 2046 | 2127 | 1 | | | | | | | IS |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

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| DAY | TIMES OF OBSERVATION START UT | TIMES OF OBSERVATION END UT | STATION | EVENTS: DECIMETRIC BAND START UT | DECIMETRIC BAND END UT | DECIMETRIC BAND INT | METRIC BAND START UT | METRIC BAND END UT | METRIC BAND INT | DEKAMETRIC BAND START UT | DEKAMETRIC BAND END UT | DEKAMETRIC BAND INT | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | | | CULG | 2127 | 2400 | | | | | | | | IS,W |
| | | | CULG | | | | 2130 | 2315 | | | | | IN,W |
| | | | HARV | | | | 2220 | 2400 | 2 | | | | I |
| | | | HARV | 2253 | | 1 | 2253 | | 2 | | | | IIIG |
| 24 | 0000 | 0745 | CULG | 0000 | 0055 | | | | | | | | IS,W |
| | | | CULG | | | | | | | 0011 | 0041 | 1 | SWF |
| | | | CULG | 0055 | 0745 | | | | | | | | IN,W |
| | | | LEAR | | | | 0112.5 | 0112.8 | 1 | | | | CONT |
| | | | CULG | | | | 0209 | | | | | | IIIB,W |
| | | | LEAR | | | | 0209.1 | 0209.2 | 1 | | | | III |
| | | | CULG | | | | 0242 | 0302 | | | | | IN,W |
| | | | CULG | 0420 | 0723 | | | | | | | | IIIN |
| | | | LEAR | | | | 0643.4 | 0658.7 | 1 | | | | S |
| | | | CULG | | | | 0651.5 | | 1 | | | | IIIB,U |
| | | | CULG | | | | 0658.5 | | 1 | | | | IIIB |
| | 0646 | 1615 | DWIN | 0712.8 | 0713.1 | 1 | | | | | | | IIIG |
| | 0651 | 1621 | WEIS | | | | 0722.8 | 0722.9 | 2 | | | | IIIB |
| | | | WEIS | | | | 0834 | 1618 | 2 | | | | IN |
| | | | DWIN | 0851.1 | 0851.5 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 0949.6 | 0950.1 | 2 | | | | DCIM |
| | | | DWIN | 1055 | 1109 | 2 | | | | | | IV | |
| | | | WEIS | | | | 1105.1 | 1105.6 | 1 | | | | IIIG |
| | | | DWIN | 1222 | 1238 | 1 | | | | | | IV | |
| | | | WEIS | | | | 1231.2 | 1245.8 | 2 | | | II | HARMONIC |
| | | | WEIS | | | | 1233.7 | 1235.8 | 2 | | | | IIIG |
| | | | SGMR | | | | 1238.8 | 1241.2 | 1 | | | II | |
| | 1402 | 2400 | HARV | | | | 1405 | 1600 | 2 | | | | I |
| | | | HARV | | | | 1600 | 2220 | 1 | | | | IN |
| | | | HARV | | | | 1858 | | 2 | | | | IIIG |
| | | | HARV | | | | 1906 | 2307 | 1 | | | | IIIN |
| | | | HARV | 1938 | 1940 | 3 | 1938 | 1942 | 3 | | | II | |
| | | | PALE | | | | 2014.6 | 2015.2 | 2 | | | | III |
| | 2045 | 2400 | CULG | | | | 2101.5 | | | | | | IIIB,W |
| | | | CULG | | | | 2125 | 2253 | | | | | IN,W |
| | | | HARV | | | | 2220 | 2400 | 1 | | | | I |
| | | | HARV | 2317 | | 2 | | | | | | | IIIG |
| 25 | 0000 | 0745 | CULG | 0000 | 0144 | | | | | | | | IN,W |
| | | | CULG | 0144 | 0745 | | | | | | | | IS,W |
| | | | LEAR | | | | 0147.1 | 0149.5 | 1 | | | | CONT |
| | | | CULG | | | | 0147.5 | 0148 | 1 | 0147.5 | 0148.5 | 1 | IIIG |
| | | | CULG | | | | 0149 | 0720 | | | | | IIIN,W |
| | | | LEAR | | | | 0215.7 | 0247.2 | 1 | | | | S |
| | | | CULG | | | | 0240.5 | | | 0240.5 | | | IIIB,W |
| | | | CULG | | | | | | | 0242 | 0300 | | SWF |
| | | | CULG | | | | 0242 | 0243 | 1 | | | | IIIB |
| | | | CULG | 0305 | 0306.5 | 1 | | | | | | | DCIM |
| | | | LEAR | | | | 0353.0 | 0353.4 | 1 | | | | CONT |
| | | | LEAR | | | | 0527.8 | 0528.3 | 1 | | | | CONT |
| | | | LEAR | | | | 0603.6 | 0604.5 | 1 | | | | CONT |
| | | | CULG | | | | 0604 | 0604.5 | 1 | | | | IIIG |
| | 0649 | 1524 | WEIS | | | | 0658 | 1525 | 2 | | | | IS |
| | | | LEAR | | | | 0800.4 | 0800.6 | 1 | | | | III |
| | | | LEAR | | | | 0814.8 | 0816.6 | 1 | | | | CONT |
| | | | LEAR | | | | 0856.0 | 0857.2 | 2 | | | | CONT |
| | | | LEAR | | | | 0924.2 | 0924.4 | 2 | | | | CONT |
| | 1528 | 1622 | WEIS | | | | 0924.2 | 0924.7 | 2 | | | | IIIG |
| | | | WEIS | | | | 0950.6 | 0950.7 | 1 | | | | IIIB |
| | | | WEIS | | | | 1222.7 | 1222.9 | 1 | | | | IIIG |
| | 1401 | 2400 | HARV | | | | 1402 | 1458 | 2 | | | | I |
| | | | HARV | | | | 1458 | 1706 | 3 | | | | I |
| | 0645 | 1615 | DWIN | 1503.7 | 1503.8 | 1 | | | | | | | IIIG |
| | | | HARV | | | | 1706 | 2400 | 2 | | | | I |
| | | | HARV | 1924 | 2040 | 1 | | | | | | | INW |
| | 2045 | 2400 | CULG | 2045 | 2400 | | 2045 | 2135 | | | | | IS,W |
| | | | CULG | | | | 2045 | 2310 | | | | | IIIN,W |
| | | | CULG | | | | 2135 | 2156 | 1 | | | | IS |
| | | | CULG | | | | 2156 | 2400 | | | | | IS,W |
| | | | CULG | | | | 2237 | | 1 | 2237 | | 1 | IIIB |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 25 | | | HARV | | | | 2237 | | 1 | | | | IIIG |
| | | | LEAR | | | | 2330.0 | 0900.0 | 1 | | | | B |
| 26 | 0000 | 0743 | CULG | 0000 | 0200 | | 0000 | 0355 | | | | | IN,W |
| | | | CULG | | | | 0012 | 0743 | | | | | IIIN,W |
| | | | CULG | | | | 0052 | 0052.5 | 1 | | | | IIIG |
| | | | CULG | | | | 0137.5 | | | 0137.5 | | | IIIB,W |
| | | | CULG | 0200 | 0743 | | | | | | | | IS,W |
| | | | CULG | | | | 0355 | 0743 | | | | | IS,W |
| | 0646 | 1300 | WEIS | | | | 0704 | 1232 | 2 | | | | IN |
| | 0643 | 1435 | DWIN | 1227.5 | 1228.2 | 2 | | | | | | | IIIG |
| | | | DWIN | 1238.5 | 1239.0 | 2 | | | | | | | IIIG |
| | | | DWIN | 1242.7 | 1242.8 | 1 | | | | | | | IIIG |
| | | | DWIN | 1313.6 | 1314.6 | 1 | | | | | | | IIIG |
| | 1344 | 2400 | HARV | | | | 1355 | 2104 | 1 | | | | IN |
| | | | HARV | | | | 1408 | 2104 | 2 | | | | IIIN |
| | | | HARV | | | | 1411 | | 2 | | | | IIIG |
| | | | DWIN | 1423.8 | 1428.5 | 3 | | | | | | | IIIGG |
| | | | HARV | 1424 | 1429 | 3 | 1425 | 1426 | 3 | | | | IIIGG |
| | | | HARV | 1643 | 1645 | 3 | 1643 | 1645 | 2 | | | | IIIG |
| | | | HARV | | | | 1730 | 1734 | 2 | | | | IIIGG |
| | | | HARV | 1836 | 1910 | 2 | 1836 | 1916 | 3 | | | | IVN |
| | | | HARV | | | | 1838 | 1900 | 3 | | | II | |
| | | | PALE | | | | 1839.1 | 1900.5 | 2 | | | II | |
| | | | SGMR | | | | 1840.7 | 1859.0 | 1 | | | II | |
| | | | HARV | 1843 | 2104 | 2 | | | | | | | IIIN |
| | | | HARV | 1932 | | 3 | 1932 | | 3 | | | | IIIGG |
| | | | HARV | 1951 | 1952 | 1 | 1952 | 1956 | 3 | 1952 | 1956 | 2 | IIIGG |
| | | | HARV | | | | 1951 | 2012 | 3 | | | II | |
| | | | PALE | | | | 1953.7 | 1956.3 | 1 | | | | CONT |
| | | | SGMR | | | | 1954.4 | 2007.5 | 1 | | | II | |
| | | | PALE | | | | 1955.1 | 2007.0 | 1 | | | II | |
| | | | HARV | 2009 | 2025 | 2 | 2009 | 2025 | 2 | | | IV | N |
| | | | HARV | 2037 | 2039 | 1 | 2037 | 2039 | 3 | | | | IIIG |
| | | | HARV | | | | 2038 | 2048 | 2 | | | IV | |
| | | | CULG | | | | 2045 | 2400 | | | | | IIIS,W |
| | | | CULG | 2045 | 2352 | 2 | | | | | | | IS,C |
| | 2045 | 2400 | CULG | | | | 2045 | 2400 | 1 | | | | IS,C |
| | | | HARV | 2104 | 2218 | 2 | 2104 | 2400 | 3 | | | | IC |
| | | | CULG | | | | | | | 2104 | 2112.5 | 2 | CONT |
| | | | CULG | | | | 2104 | 2105.5 | 2 | | | | IIIG,V |
| | | | HARV | 2104 | 2257 | 2 | 2104 | 2300 | 2 | | | | IIIN |
| | | | CULG | | | | 2106 | | 2 | | | | IIIB |
| | | | CULG | 2136.5 | 2137 | 2 | | | | | | | IIIG |
| | | | CULG | | | | | | | 2205 | 2255 | 1 | IIIN |
| | | | HARV | 2227 | 2229 | 2 | 2227 | 2229 | 2 | | | | IIIG |
| | | | CULG | 2229 | 2229.5 | 1 | | | | | | | IIIG |
| | | | LEAR | | | | 2236.0 | 1037.0 | 2 | | | | B |
| | | | CULG | 2327.5 | 2328.5 | 2 | 2327.5 | 2329 | 2 | 2328 | 2329 | 2 | IIIG |
| | | | HARV | 2328 | 2336 | 3 | 2328 | 2336 | 3 | | | | IIIGG |
| | | | CULG | 2331 | 2334 | 3 | 2331 | 2334 | 3 | 2332 | 2333.5 | 3 | IIIGG |
| | | | CULG | 2332 | 2334 | 2 | | | | | | | POSSII |
| | | | CULG | 2335 | 2336 | 1 | | | | | | | IIIG |
| 27 | 0000 | 0745 | CULG | | | | 0000 | 0745 | 1 | | | | IS,C |
| | | | CULG | | | | 0000 | 0745 | | | | | IIIN |
| | | | CULG | 0000 | 0745 | 1 | | | | | | | IS,C |
| | | | CULG | 0033 | 0033.5 | 2 | | | | | | | IIIG |
| | | | CULG | 0038 | 0038.5 | 2 | 0038 | 0038.5 | 2 | | | | IIIG |
| | | | CULG | 0134 | 0136 | 3 | 0134 | 0136 | 2 | 0133.5 | 0136 | 2 | IIIG |
| | | | CULG | 0140.5 | 0142 | 2 | 0140.5 | 0142 | 2 | | | | IIIGG |
| | | | CULG | | | | | | | 0141 | 0405 | | IIIN,W |
| | | | CULG | 0144 | 0534 | 1 | | | | | | | IIIN |
| | | | CULG | | | | 0207 | 0207.5 | 1 | 0207 | 0207.5 | 1 | IIIB |
| | | | CULG | | | | 0402 | 0413 | 1 | | | | IIIG,N |
| | | | CULG | | | | 0454 | 0454.5 | 2 | 0454 | 0454.5 | 1 | IIIG |
| | | | CULG | 0457 | 0457.5 | | 0457 | 0458 | 3 | 0457 | 0457.5 | 2 | IIIG,V |
| | | | CULG | | | | 0458.5 | | 3 | 0458.5 | | 2 | IIIB |
| | | | CULG | | | | 0520 | | 2 | | | | IIIB |
| | 0641 | 1625 | DWIN | 0641 | 1625 | 1 | | | | | | | CONT |

# SOLAR RADIO EMISSION
# SPECTRAL OBSERVATIONS

FEBRUARY 1981

| DAY | TIMES OF OBSERVATION | | STATION | EVENTS | | | | | | | | | SPECTRAL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DECIMETRIC BAND | | | METRIC BAND | | | DEKAMETRIC BAND | | | |
| | START UT | END UT | | START UT | END UT | INT | START UT | END UT | INT | START UT | END UT | INT | |
| 27 | 0644 | 1611 | WEIS | | | | 0648 | 1610 | 2 | | | | IN |
| | | | CULG | | | | 0703 | 0745 | 1 | | | | IIIN |
| | | | WEIS | | | | 0833 | 1550 | 1 | | | | IIIN |
| | | | DWIN | 1236.2 | 1236.4 | 2 | | | | | | | IIIG |
| | | | WEIS | | | | 1237.2 | 1237.4 | 2 | | | | IIIG |
| | | | DWIN | 1253.1 | | 1 | | | | | | | IIIB |
| | | | DWIN | 1306.1 | 1306.4 | 1 | | | | | | | IIIG |
| | | | DWIN | 1309.1 | 1309.2 | 2 | | | | | | | IIIG |
| | 1344 | 2400 | HARV | | | | 1319 | 1800 | 3 | | | | I |
| | | | DWIN | 1351.9 | | 1 | | | | | | | IIIB |
| | | | DWIN | 1448.1 | 1448.5 | 1 | | | | | | | IIIG |
| | | | HARV | | | | 1800 | 2400 | 2 | | | | I |
| | | | PALE | | | | 1900.5 | 0415.0 | 1 | | | IV | |
| | | | PALE | | | | 1958.3 | 0315.0 | 1 | | | | B |
| | | | HARV | | | | 2003 | 2010 | 2 | 2003 | 2010 | 1 | IIIGG |
| | 2045 | 2400 | CULG | 2045 | 2400 | | | | | | | | IS,W,C |
| | | | CULG | | | | 2045 | 2400 | | | | | IIIS,W |
| | | | CULG | | | | 2045 | 2400 | 1 | | | | IS,C,DC |
| | | | CULG | | | | 2045 | 2330 | 1 | | | | IIIN |
| | | | HARV | | | | 2057 | | 1 | | | | IIIB |
| | | | HARV | | | | 2224 | | 1 | | | | IIIBW |
| | | | CULG | | | | 2224 | 2224.5 | 1 | 2224 | 2224.5 | 1 | IIIG |
| | | | CULG | | | | 2227 | 2227.5 | 2 | 2227 | 2227.5 | 1 | IIIG |
| | | | HARV | | | | 2227 | | 2 | | | | IIIG |
| | | | CULG | | | | 2309 | 2313 | 1 | | | | N,RS,DP |
| | | | LEAR | | | | 2309.5 | 1036.0 | 1 | | | | B |
| | | | HARV | 2317 | | 1 | | | | | | | IIIG |
| | | | CULG | | | | | | | 2320 | 2340 | | W,SWF |
| 28 | | | CULG | | | | 0000 | 0210 | | | | | IIIS,W |
| | 0000 | 0745 | CULG | 0000 | 0220 | 1 | | | | | | | CONT |
| | | | CULG | | | | 0000 | 0745 | 1 | | | | IS,DC |
| | | | CULG | | | | 0002 | 0650 | 1 | | | | IIIN |
| | | | CULG | | | | 0102 | 0645 | 1 | | | | N,RS,DP |
| | | | LEAR | | | | 0120.4 | 0121.0 | 2 | | | | CONT |
| | | | CULG | | | | | | | 0120.5 | 0121 | | IIIG,W |
| | | | CULG | | | | 0120.5 | 0121 | 2 | | | | IIIG |
| | | | CULG | | | | 0210 | 0745 | | | | | IIIN,W |
| | | | CULG | 0220 | 0745 | | | | | | | | IS,W |
| | | | CULG | 0618 | 0618.5 | 1 | | | | | | | IIIG |
| | | | CULG | | | | 0634 | | 2 | | | | IIIB |
| | | | LEAR | | | | 0634.0 | 0634.5 | 2 | | | | CONT |
| | 0640 | 1630 | DWIN | 0706.4 | 0707.5 | 2 | | | | | | | IIIG |
| | | | CULG | 0706.5 | 0707 | 1 | | | | | | | IIIG |
| | | | CULG | 0732 | 0732.5 | 1 | | | | | | | IIIG |
| | | | WEIS | | | | 0736 | 1203 | 1 | | | | IN |
| | 0735 | 1627 | WEIS | | | | 0842 | 1627 | 1 | | | | IIIN |
| | | | DWIN | 0903.6 | 0904.2 | 2 | | | | | | | IIIG |
| | 1345 | 2400 | HARV | | | | 1349 | 2400 | 2 | | | | IC |
| | | | HARV | | | | 1417 | 2400 | 2 | | | | IIIN |
| | | | DWIN | 1558.3 | 1558.5 | 1 | | | | | | | IIIG |
| | | | HARV | | | | 1923 | | 2 | | | | IIIG |
| | | | CULG | | | | 2045 | 2400 | | | | | IIIN,W |
| | 2045 | 2400 | CULG | 2045 | 2400 | | 2045 | 2400 | | | | | IS,W |
| | | | CULG | | | | 2048.5 | | 1 | | | | RS,DP |
| | | | CULG | | | | 2133 | 2349 | 1 | | | | DC,N |

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

## COSMIC RAY INDICES

### (Neutron Monitors)

FEBRUARY 1981

| February 1981 | THULE Average (cts/h)/100 | ALERT Average (cts/h)/100 | DEEP RIVER Average (cts/h)/300 | CALGARY Average (cts/h/100 | KIEL Average (cts/h)/100 | CLIMAX Average (cts/h)/100 | TOKYO Average (cts/h)/100 | HUANCAYO Average (cts/h)/100 |
|---|---|---|---|---|---|---|---|---|
| 1 | 3977 | 6501.7 | 6129.5 | | 5560.2 | | 3504.3 | |
| 2 | 3954 | 6473.7 | 6066.2 | | 5510.6 | | 3507.5 | |
| 3 | 3925 | 6405.4 | 6062.4 | | 5480.4 | | 3491.8 | |
| 4 | 3922 | 6417.5 | 6074.5 | | 5516.9 | | 3493.0 | |
| 5 | 3955 | 6464.5 | 6112.3 | | 5521.2 | | 3515.6 | |
| 6 | 3959 | 6450.3 | 6083.5 | | 5507.6 | | 3529.8 | |
| 7 | 3918 | 6373.9 | 6049.9 | | 5449.0 | | 3514.3 | |
| 8 | 3948 | 6424.2 | 6058.0 | | 5490.8 | | 3501.0 | |
| 9 | 4012 | 6519.0 | 6132.8 | | 5552.5 | | 3527.7 | |
| 10 | 4014 | 6527.5 | 6129.0 | | 5566.0 | | 3526.0 | |
| 11 | 4034 | 6560.3 | 6113.6 | | 5580.2 | | 3525.6 | |
| 12 | 4039 | 6528.0 | 6182.6 | | 5601.8 | | 3520.8 | |
| 13 | 4045 | 6612.8 | 6232.5 | | 5631.2 | | 3528.2 | |
| 14 | 4063 | 6628.3 | 6239.8 | | 5660.5 | | 3539.3 | |
| 15 | 4082 | 6642.0 | 6251.8 | | 5680.5 | | 3550.7 | |
| 16 | 4088 | 6655.2 | 6252.3 | | 5683.8 | | 3560.8 | |
| 17 | 4096 | 6665.0 | 6254.1 | | 5694.9 | | 3536.7 | |
| 18 | 4100 | 6682.4 | 6257.8 | | 5697.3 | | 3560.4 | |
| 19 | 4117 | 6709.3 | 6266.8 | | 5714.9 | | 3567.4 | |
| 20 | 4090 | 6651.6 | 6232.5 | | 5682.7 | | 3565.2 | |
| 21 | 4077 | 6628.3 | 6217.8 | | 5658.0 | | 3553.3 | |
| 22 | 4075 | 6635.3 | 6237.0 | | 5677.2 | | 3541.8 | |
| 23 | 4073 | 6628.5 | 6259.3 | | 5668.9 | | 3551.5 | |
| 24 | 4035 | 6593.5 | 6213.5 | | 5621.5 | | 3519.8 | |
| 25 | 4076 | 6665.8 | 6249.0 | | 5643.1 | | 3547.4 | |
| 26 | 4024 | 6576.2 | 6180.0 | | 5604.0 | | 3547.4 | |
| 27 | 3966 | 6489.5 | 6128.7 | | 5576.8 | | 3525.1 | |
| 28 | 3973 | 6509.6 | 6126.6 | | 5578.5 | | 3531.5 | |
| MEAN | 4023 | 6557.9 | 6171.6 | | 5600.4 | | 3531.6 | |

Data not available at time of publication.

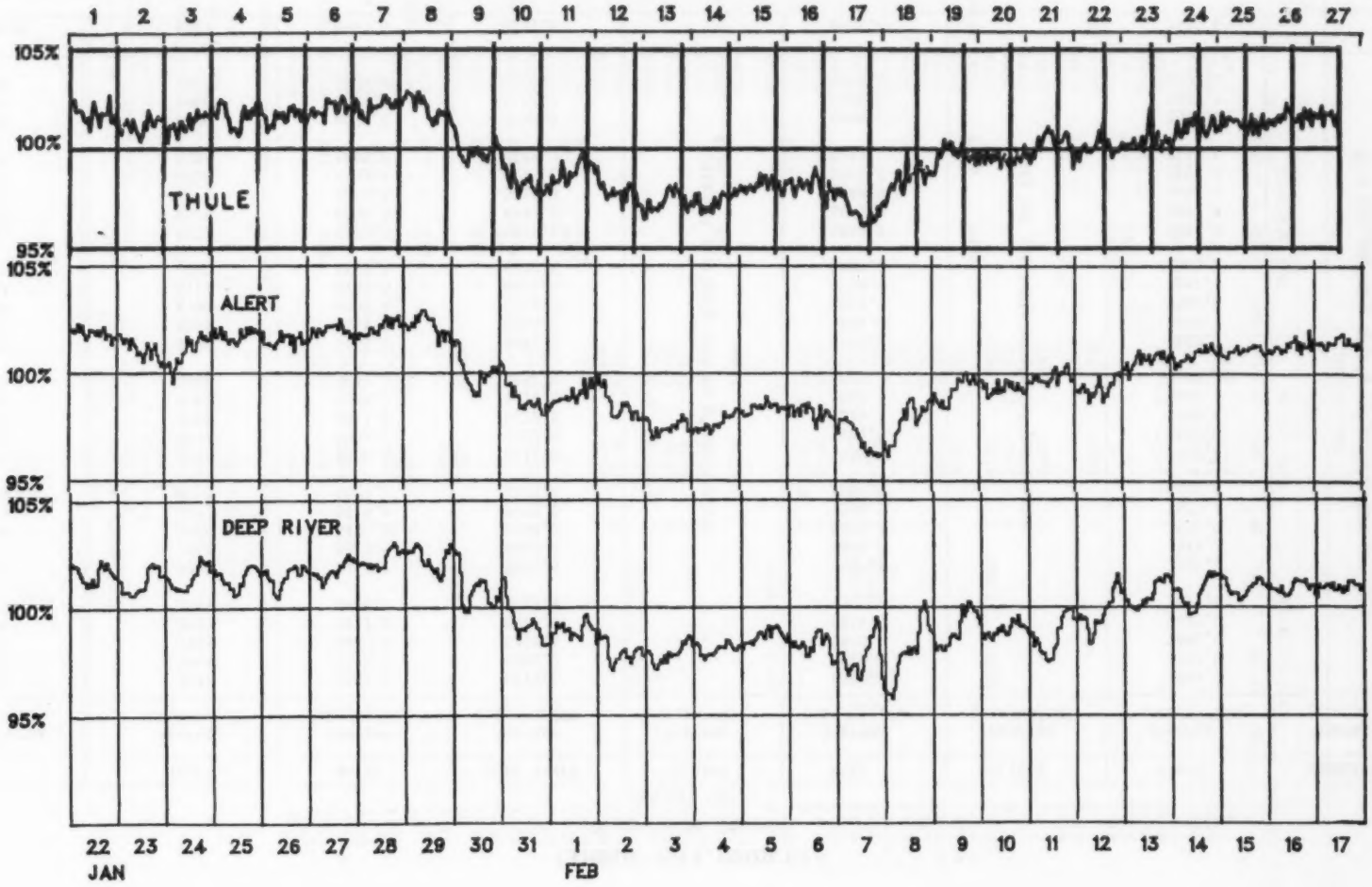
Data not available at time of publication.

Data not available at time of publication.

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

## COSMIC RAY INDICES
## (Neutron Monitor)

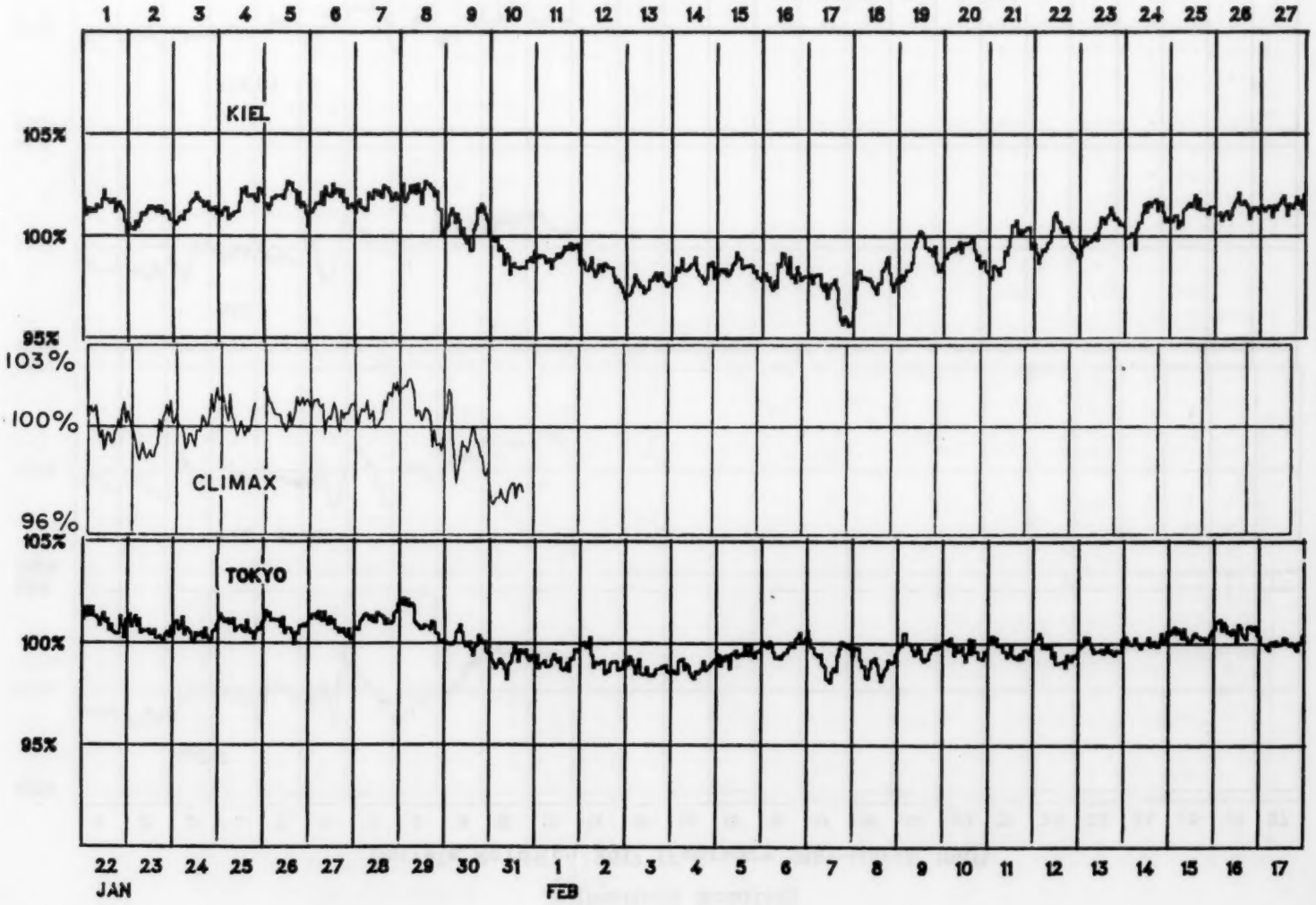
Bartels Rotation 2016 (January 1981–February 1981)




COSMIC RAY INDICES

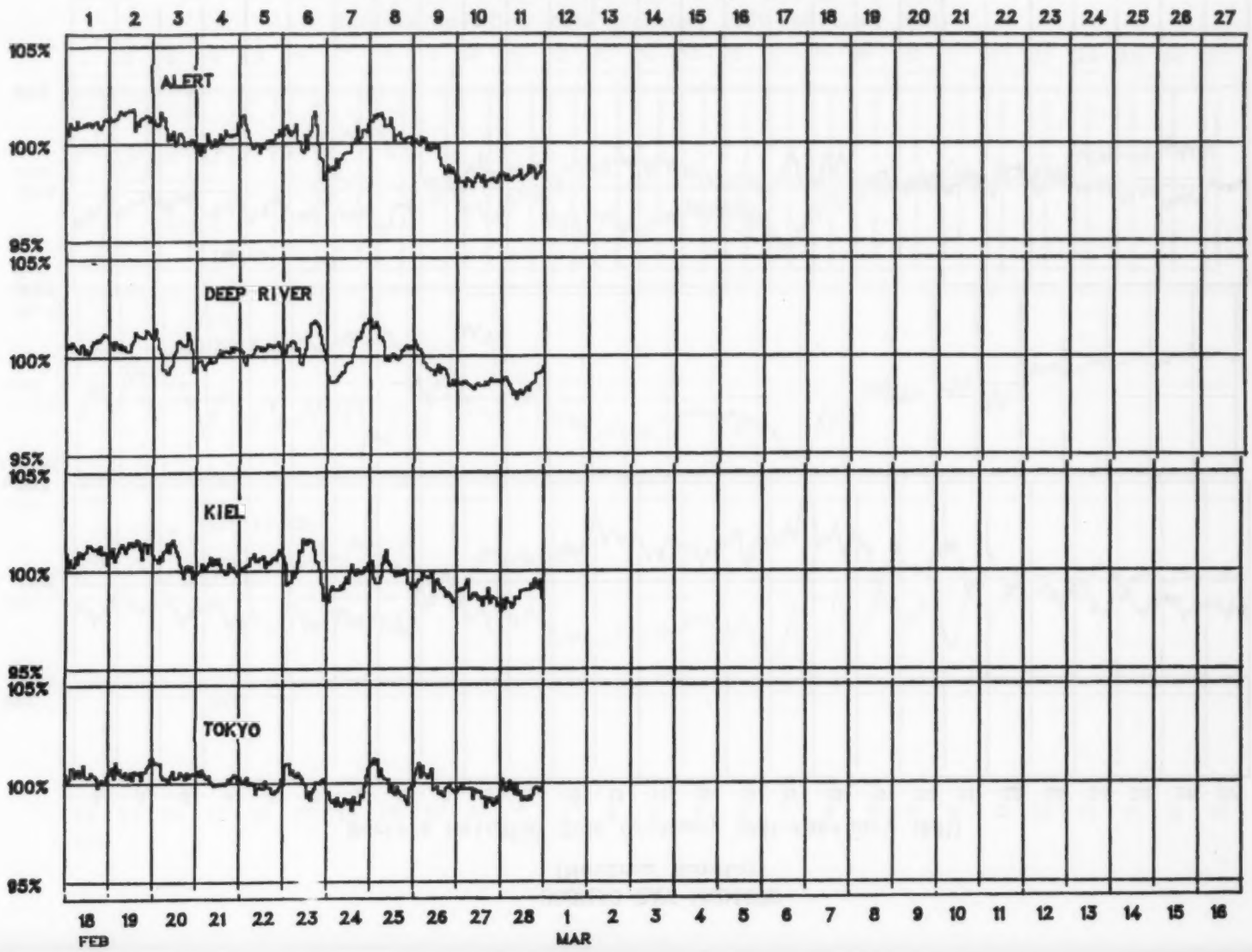
## COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2016 (January 1981–February 1981)



## COSMIC RAY INDICES
## (Neutron Monitor)

Bartels Rotation 2017 (February 1981–March 1981)



# GEOMAGNETIC ACTIVITY INDICES

FEBRUARY 1981

| Day | Three-Hourly Indices Kp | | | | | | | | | Ap | Cp | Three-Hourly Indices Km | | | | | | | | Am | aa | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Sum | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | N | S | M |
| 1 | | 2- | 3+ | 3+ | 3+ | 3+ | 2 | 3- | 3+ | 23 | 14 | 0.8 | 2 | 3 | 3 | 3 | 3 | 2+ | 3- | 4- | 28 | 23 | 29 | 25 27 |
| 2 | D5 | 3+ | 3 | 4 | 3+ | 4- | 5- | 4- | 3- | 28+ | 22 | 1.1 | 3+ | 3- | 4- | 3 | 4- | 4+ | 3+ | 3 | 39 | 38 | 31 | 26 43 |
| 3 | | 3 | 2+ | 3 | 3- | 3 | 3 | 3+ | 2- | 22 | 13 | 0.8 | 3- | 2 | 3- | 3- | 3- | 3 | 3+ | 1+ | 23 | 26 | 23 | 24 26 |
| 4 | Q9A | 3- | 1+ | 1+ | 1+ | 1- | 2+ | 3+ | 3- | 16- | 9 | 0.5 | 2 | 1- | 1- | 1 | 1- | 2+ | 3 | 3- | 13 | 23 | 13 | 10 27 |
| 5 | D4 | 2 | 4 | 3+ | 4+ | 4+ | 4+ | 4 | 4- | 30 | 25 | 1.2 | 2- | 3- | 2+ | 4+ | 4+ | 4+ | 4 | 3+ | 42 | 40 | 43 | 38 45 |
| 6 | D1 | 3+ | 2 | 2+ | 4- | 6 | 6 | 7- | 5+ | 35+ | 48 | 1.6 | 3 | 2- | 3- | 3+ | 6- | 5+ | 6- | 5 | 72 | 71 | 69 | 24 116 |
| 7 | | 6 | 5- | 3 | 2 | 2+ | 1 | 0+ | 0+ | 20- | 20 | 1.0 | 5 | 4- | 2+ | 1+ | 2- | 1- | 0+ | 1- | 24 | 27 | 19 | 38 8 |
| 8 | | 0 | 0+ | 0+ | 1- | 4- | 4+ | 3 | 4+ | 17- | 14 | 0.8 | 0+ | 1- | 0+ | 1- | 3+ | 4+ | 3 | 4 | 25 | 24 | 25 | 4 44 |
| 9 | | 5+ | 5 | 4 | 3 | 3 | 2- | 1+ | 1- | 24 | 22 | 1.1 | 4+ | 4+ | 3+ | 3- | 3 | 2 | 1+ | 1- | 31 | 27 | 22 | 38 11 |
| 10 | Q2 | 1- | 1- | 0+ | 0 | 1+ | 1 | 1+ | 0+ | 6- | 3 | 0.1 | 1 | 1 | 0+ | 0 | 1+ | 1 | 1 | 0+ | 5 | 4 | 10 | 6 8 CC |
| 11 | | 1- | 0+ | 1 | 1+ | 3 | 3 | 3 | 4- | 16 | 10 | 0.6 | 1 | 0+ | 1 | 1+ | 3 | 3+ | 3 | 3 | 19 | 22 | 18 | 8 32 |
| 12 | | 4 | 2+ | 2+ | 3 | 2 | 1 | 2+ | 2- | 19- | 11 | 0.6 | 3 | 2 | 2- | 2+ | 2+ | 1 | 2+ | 2 | 16 | 19 | 18 | 23 14 |
| 13 | Q8A | 1+ | 2- | 1+ | 2 | 3 | 2- | 1+ | 2- | 14 | 7 | 0.3 | 1 | 1+ | 1+ | 2+ | 3- | 2- | 1+ | 1+ | 12 | 15 | 15 | 15 16 K |
| 14 | Q1 | 0 | 0+ | 1- | 1 | 0+ | 1+ | 1- | 1- | 5 | 3 | 0.0 | 1- | 1- | 1- | 1 | 1- | 1+ | 1- | 1- | 5 | 5 | 7 | 6 5 CK |
| 15 | | 0+ | 0 | 0+ | 2- | 2+ | 4 | 4- | 3- | 15 | 10 | 0.6 | 1- | 0+ | 1- | 1+ | 2+ | 4 | 4- | 3- | 21 | 22 | 22 | 6 39 |
| 16 | | 3- | 3+ | 2 | 3 | 2+ | 3- | 1+ | 1 | 18+ | 10 | 0.6 | 3 | 2 | 2- | 3- | 2 | 2+ | 2- | 2- | 17 | 20 | 24 | 28 16 |
| 17 | Q5 | 1+ | 1 | 2- | 2 | 2+ | 2- | 1 | 1+ | 12+ | 6 | 0.3 | 2 | 1+ | 2 | 2 | 2+ | 2- | 1+ | 1+ | 13 | 11 | 16 | 15 11 CC |
| 18 | Q4 | 0+ | 1- | 1- | 1+ | 2 | 2- | 2- | 3- | 11 | 6 | 0.2 | 1 | 1 | 1- | 1+ | 2 | 2 | 2- | 2+ | 11 | 10 | 10 | 6 14 CC |
| 19 | Q6 | 3- | 2+ | 2- | 1 | 2- | 1 | 1 | 2- | 13 | 6 | 0.3 | 2 | 2 | 2- | 1 | 2- | 1 | 1 | 2- | 11 | 13 | 10 | 14 9 C |
| 20 | Q8A | 1 | 0+ | 2 | 3+ | 3 | 3 | 1+ | 1 | 15 | 9 | 0.5 | 1+ | 1- | 2+ | 3 | 3 | 3- | 1+ | 1 | 16 | 11 | 20 | 19 13 K |
| 21 | Q3 | 1 | 1 | 3- | 2 | 2- | 1- | 1- | 1- | 10+ | 5 | 0.2 | 1 | 1 | 2+ | 2 | 2- | 0 | 1- | 1 | 9 | 9 | 12 | 14 7 CC |
| 22 | Q7K | 0 | 0 | 0 | 1- | 1- | 1+ | 2 | 4+ | 9 | 6 | 0.3 | 0+ | 1- | 1- | 1 | 1- | 1 | 2- | 4 | 12 | 18 | 10 | 5 23 K |
| 23 | | 4+ | 2+ | 1+ | 1- | 2+ | 3 | 2 | 3- | 19- | 12 | 0.7 | 4- | 2 | 2- | 1 | 2- | 3- | 2 | 3- | 20 | 25 | 16 | 19 22 |
| 24 | | 2 | 3- | 2- | 2+ | 3 | 4+ | 5- | 5- | 25+ | 20 | 1.0 | 3- | 3- | 2+ | 2+ | 3 | 3+ | 4+ | 5- | 36 | 35 | 31 | 20 46 |
| 25 | D3 | 4 | 4 | 5- | 4- | 3+ | 3+ | 4- | 4- | 30+ | 24 | 1.2 | 4- | 3 | 4 | 3+ | 3- | 3+ | 3+ | 3+ | 38 | 40 | 33 | 38 36 |
| 26 | D2 | 4- | 3+ | 3- | 4- | 3+ | 4 | 6 | 4+ | 31 | 29 | 1.3 | 4- | 3- | 3- | 3+ | 3- | 4- | 5+ | 4- | 44 | 49 | 41 | 30 61 |
| 27 | | 3+ | 3+ | 4 | 4- | 3+ | 4- | 4 | 3 | 28+ | 21 | 1.1 | 3 | 3 | 3+ | 3 | 3 | 4- | 4- | 3- | 33 | 35 | 37 | 38 34 |
| 28 | | 3 | 2+ | 2+ | 2 | 2- | 2 | 3 | 4- | 20 | 11 | 0.6 | 3- | 2+ | 2- | 2+ | 2 | 2 | 3- | 4- | 21 | 23 | 23 | 22 25 |
| | | | | | | | | | Mean | | 14 | 0.69 | | | | | | | | | 23.4 | 24.5 | 23.1 | 23.9 |

| Day | Three-Hourly Indices Kn | | | | | | | | An | Three-Hourly Indices Ks | | | | | | | | As |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| 1 | 2- | 3- | 3 | 3 | 3 | 2 | 2+ | 3 | 24 | 2+ | 3 | 3+ | 3 | 3+ | 2+ | 3- | 4 | 31 |
| 2 | 3+ | 3- | 3+ | 3 | 4- | 5- | 4- | 3- | 39 | 3+ | 3 | 4- | 3 | 4- | 4 | 3 | 3 | 38 |
| 3 | 3- | 1+ | 3- | 3- | 3- | 3 | 3 | 1+ | 22 | 3- | 3- | 3- | 3- | 3- | 3 | 3+ | 1+ | 24 |
| 4 | 2- | 1- | 0+ | 1- | 1- | 2+ | 3+ | 3- | 14 | 2 | 1 | 1 | 1 | 0+ | 2+ | 3 | 2+ | 13 |
| 5 | 2- | 3 | 3- | 5 | 4+ | 4+ | 4- | 3+ | 45 | 2 | 2+ | 2+ | 4- | 4+ | 5- | 4+ | 3+ | 41 |
| 6 | 3 | 2- | 3- | 3+ | 6- | 5 | 6- | 5+ | 72 | 3 | 2- | 3- | 3+ | 6- | 5+ | 6- | 5- | 71 |
| 7 | 5+ | 4- | 2+ | 2- | 2 | 1- | 0 | 0+ | 25 | 5- | 4 | 2+ | 1+ | 2- | 1- | 1- | 1- | 23 |
| 8 | 0+ | 0+ | 1- | 0+ | 4- | 5- | 3 | 4 | 28 | 0+ | 1- | 0+ | 1- | 3+ | 4- | 3 | 4- | 23 |
| 9 | 4+ | 4+ | 3+ | 3- | 3 | 2- | 1+ | 1- | 31 | 5- | 4 | 3+ | 3- | 3- | 2 | 2- | 1- | 32 |
| 10 | 0+ | 1- | 0+ | 0 | 1+ | 1 | 1 | 0+ | 4 | 1+ | 1 | 1- | 0+ | 1+ | 1- | 1+ | 1- | 6 |
| 11 | 1- | 0 | 1 | 1 | 3 | 4- | 3+ | 3 | 20 | 1 | 1 | 1 | 1+ | 3 | 3 | 3 | 3- | 18 |
| 12 | 3 | 2- | 2 | 3- | 3- | 1 | 2+ | 2 | 18 | 3- | 2+ | 2- | 2+ | 2- | 1 | 2+ | 2 | 15 |
| 13 | 1 | 1 | 1+ | 2+ | 3- | 2 | 1 | 1+ | 12 | 1 | 1+ | 1 | 3- | 3- | 1+ | 1+ | 1+ | 12 |
| 14 | 0+ | 0+ | 0+ | 1+ | 1- | 2 | 1- | 1- | 5 | 1 | 1- | 1- | 1- | 1- | 1 | 1- | 1- | 3 |
| 15 | 0+ | 0 | 1- | 1+ | 2+ | 4+ | 4- | 3- | 22 | 1+ | 1- | 1- | 1+ | 3- | 4- | 3+ | 3 | 20 |
| 16 | 3- | 2+ | 2- | 3- | 2 | 3- | 2- | 1+ | 17 | 3+ | 2 | 2- | 3- | 2+ | 2 | 1+ | 2- | 19 |
| 17 | 2- | 1 | 2- | 2- | 2+ | 2 | 1+ | 1+ | 12 | 2+ | 2- | 2+ | 2 | 2+ | 1+ | 1+ | 1 | 14 |
| 18 | 1- | 0+ | 0+ | 1 | 2 | 2 | 2- | 3- | 10 | 1 | 1+ | 1- | 1+ | 2+ | 2 | 2 | 2- | 11 |
| 19 | 2 | 2 | 2- | 1 | 1+ | 1+ | 1 | 2- | 11 | 2 | 2+ | 2- | 1 | 2 | 1 | 1 | 2- | 11 |
| 20 | 1 | 0+ | 2- | 3 | 3- | 2+ | 1+ | 1 | 14 | 2- | 1 | 3 | 3 | 3+ | 3- | 1 | 1- | 18 |
| 21 | 1- | 1 | 2+ | 2+ | 2 | 0+ | 0+ | 1 | 9 | 1+ | 1+ | 2+ | 2 | 2- | 0 | 1 | 1+ | 10 |
| 22 | 0 | 0+ | 0 | 1- | 1- | 1+ | 2- | 4 | 11 | 1- | 1+ | 1 | 1+ | 1- | 1 | 2- | 4 | 13 |
| 23 | 4- | 2- | 1+ | 1- | 2- | 3 | 2 | 3- | 19 | 4 | 2+ | 2- | 1+ | 2- | 3- | 2 | 3 | 21 |
| 24 | 2 | 2+ | 2- | 2+ | 3- | 4- | 4+ | 4- | 30 | 3 | 3 | 3- | 2+ | 3 | 3+ | 5- | 5 | 42 |
| 25 | 3 | 3 | 4 | 3+ | 3- | 4- | 3+ | 3 | 36 | 4 | 3+ | 4- | 3+ | 3- | 3+ | 3+ | 3+ | 39 |
| 26 | 3 | 3- | 3- | 4- | 3- | 4- | 5+ | 3+ | 42 | 4 | 2+ | 3- | 3+ | 3- | 4- | 5+ | 4 | 47 |
| 27 | 3- | 3 | 3+ | 3+ | 3- | 4- | 4- | 3- | 32 | 3 | 3 | 3 | 3 | 3 | 4- | 4- | 3- | 34 |
| 28 | 3- | 2 | 2- | 2+ | 2+ | 2 | 3 | 3+ | 20 | 3- | 3- | 2- | 2 | 2 | 2 | 3- | 4- | 22 |
| | | | | | | | | Mean | 23.0 | | | | | | | | | 24.0 |

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

| Date | N | S | M |
|---|---|---|---|
| 21 Feb 1979 | | | 66 102 |
| 10 Mar | | | 54 101 |
| 25 Apr | 109 | | 27 148 |
| 26 Apr | | | 103 15 |
| 13 Aug | | | 53 108 |
| 20 Aug | | | 33 100 |
| 29 Aug | | | 59 111 |
| 18 Sep | | | 100 63 |
| 25 Jul 1980 | | | 13 100 |
| 19 Dec | 118 | 123 | 63 178 |
| 06 Feb 1981 | | | 24 116 |

NOTE:

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

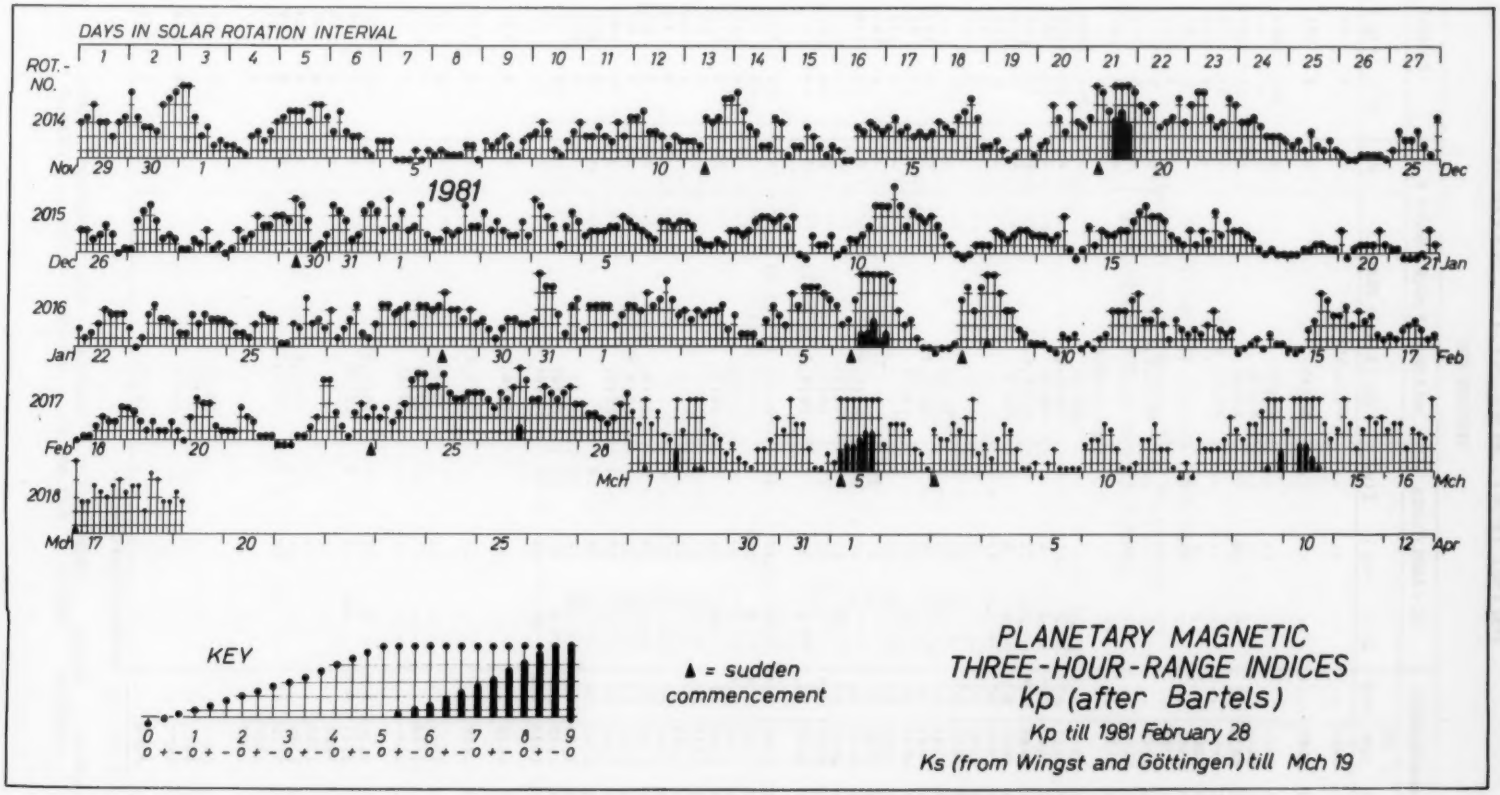
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp≥3 or two Kp values≥3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

# DAILY AVERAGE INDICES Ap

| | 1980 | | | | | | | | | | 1981 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB |
| 1 | 3 | 4 | 8 | 22 | 5 | 4 | 7 | 2 | 16 | 19 | 13 | 14 |
| 2 | 3 | 3 | 4 | 7 | 3 | 7 | 4 | 5 | 11 | 7 | 9 | 22 |
| 3 | 5 | 7 | 3 | 9 | 4 | 20 | 12 | 5 | 5 | 21 | 9 | 13 |
| 4 | 5 | 11 | 4 | 5 | 7 | 8 | 12 | 26 | 12 | 8 | 14 | 9 |
| 5 | 7 | 7 | 7 | 4 | 15 | 4 | 10 | 22 | 5 | 4 | 9 | 25 |
| 6 | 9 | 28 | 12 | 16 | 10 | 21 | 9 | 14 | 6 | 4 | 9 | 48 |
| 7 | 7 | 18 | 9 | 27 | 13 | 10 | 10 | 12 | 6 | 6 | 6 | 20 |
| 8 | 6 | 17 | 7 | 23 | 14 | 4 | 8 | 12 | 6 | 9 | 11 | 14 |
| 9 | 7 | 20 | 18 | 14 | 8 | 9 | 12 | 16 | 9 | 10 | 6 | 22 |
| 10 | 4 | 22 | 8 | 33 | 4 | 9 | 4 | 22 | 14 | 10 | 9 | 3 |
| 11 | 4 | 30 | 38 | 59 | 10 | 8 | 6 | 40 | 24 | 16 | 19 | 10 |
| 12 | 1 | 28 | 23 | 32 | 5 | 8 | 18 | 11 | 12 | 16 | 4 | 11 |
| 13 | 7 | 18 | 14 | 27 | 9 | 6 | 16 | 5 | 6 | 6 | 6 | 7 |
| 14 | 5 | 10 | 17 | 10 | 9 | 6 | 8 | 11 | 10 | 8 | 6 | 3 |
| 15 | 2 | 20 | 6 | 5 | 6 | 5 | 8 | 15 | 22 | 10 | 7 | 10 |
| 16 | 4 | 12 | 3 | 9 | 6 | 26 | 8 | 3 | 16 | 16 | 12 | 10 |
| 17 | 5 | 11 | 3 | 3 | 6 | 10 | 14 | 5 | 11 | 5 | 8 | 6 |
| 18 | 4 | 4 | 4 | 3 | 30 | 18 | 4 | 21 | 16 | 15 | 4 | 6 |
| 19 | 10 | 5 | 8 | 8 | 16 | 28 | 6 | 11 | 17 | 79 | 3 | 6 |
| 20 | 4 | 6 | 5 | 6 | 9 | 10 | 7 | 4 | 17 | 21 | 4 | 9 |
| 21 | 18 | 5 | 4 | 6 | 14 | 8 | 2 | 7 | 13 | 26 | 2 | 5 |
| 22 | 16 | 9 | 6 | 6 | 5 | 10 | 8 | 23 | 8 | 11 | 9 | 6 |
| 23 | 6 | 6 | 11 | 6 | 4 | 5 | 5 | 44 | 10 | 5 | 8 | 12 |
| 24 | 4 | 7 | 12 | 13 | 7 | 4 | 4 | 14 | 12 | 3 | 8 | 20 |
| 25 | 6 | 9 | 34 | 8 | 46 | 5 | 7 | 24 | 16 | 8 | 7 | 24 |
| 26 | 30 | 5 | 7 | 15 | 26 | 12 | 5 | 13 | 21 | 6 | 8 | 29 |
| 27 | 7 | 5 | 3 | 3 | 15 | 22 | 6 | 3 | 19 | 10 | 8 | 21 |
| 28 | 7 | 4 | 4 | 3 | 14 | 4 | 6 | 2 | 23 | 4 | 16 | 11 |
| 29 | 8 | 6 | 6 | 5 | 6 | 4 | 9 | 3 | 16 | 9 | 15 | |
| 30 | 11 | 8 | 10 | 8 | 8 | 6 | 5 | 10 | 24 | 13 | 7 | |
| 31 | 21 | | 16 | | 6 | 7 | | 30 | | 15 | 22 | |
| MEAN | 8 | 11 | 10 | 13 | 11 | 10 | 8 | 14 | 13 | 13 | 9 | 14 |

# GEOMAGNETIC ACTIVITY INDICES



# PRINCIPAL MAGNETIC STORMS

FEBRUARY 1981

| OBS. 3 letter code | GEOMAG-NETIC LATI-TUDE | COMMENCEMENT DAY | hr min (UT) | TYPE | SC - AMPLITUDES D(') | H(γ) | Z(γ) | MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD) | K | RANGES D(') | H(γ) | Z(γ) | UT END DAY | HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYB | 07.6N | 01 | 0400 | .. | .. | .. | .. | 02(4,5) | 4 | 4 | 84 | 47 | 03 | 23 |
| HYB | 07.6N | 04 | 1500 | .. | .. | .. | .. | 05(6) | 6 | 4 | 191 | 23 | 06 | 02 |
| COL | 64.6N | 05 | 04-- | .. | .. | .. | .. | 05(4) | 8 | 302 | 2080 | 810 | 06 | 01 |
| SIT | 60.0N | 05 | 04-- | .. | .. | .. | .. | 06(5) | 7 | -- | -- | 580 | 07 | 08 |
| NEW | 55.1N | 05 | 0435 | SC | 3 | 20 | -- | 05(4) | 5 | 31 | 157 | 169 | 06 | 04 |
| FRD | 49.6N | 05 | ---- | .. | .. | .. | .. | 06(5) 07(1) | 6 | 33 | 174 | 104 | 09 | -- |
| JAI | 17.3N | 05 | 0200 | .. | .. | .. | .. | | - | 4 | 168 | 29 | 06 | 00 |
| SHL | 14.6N | 05 | 0200 | .. | .. | .. | .. | | - | 3 | 201 | 16 | 06 | 00 |
| UJJ | 13.5N | 05 | 0200 | .. | .. | .. | .. | | - | 3 | 169 | 27 | 06 | 00 |
| ABG | 09.5N | 05 | 0200 | .. | .. | .. | .. | 05(4,5,6,7) | 5 | 5 | 171 | 37 | 06 | 00 |
| ANN | 01.5N | 05 | 0200 | .. | .. | .. | .. | | - | 5 | 202 | 52 | 06 | 00 |
| TRD | 01.2S | 05 | 0200 | .. | .. | .. | .. | | - | 4 | 202 | 95 | 06 | 00 |
| COL | 64.6N | 06 | 09-- | .. | .. | .. | .. | 06(6) | 8 | 294 | 1900 | 950 | 07 | 08 |
| NEW | 55.1N | 06 | 0847 | SC | 2 | 11 | -- | 06(5,6) | 6 | 45 | 188 | 273 | 07 | 10 |
| WIT | 54.2N | 06 | 0847 | SC* | - 9 * | 4 | * | 06(7) | 7 | 42 | 300 | 95 | 07 | 06 |
| IRK | 41.0N | 06 | 0848 | SC* | 1.1 | 22 | 4 | 06(5,6,8) | 6 | 23 | 169 | 51 | 07 | 15 |
| HON | 21.1N | 06 | 0848 | SC | -- | 8 | 3 | 06(5) | 5 | 8 | 128 | 23 | 07 | 15 |
| JAI | 17.3N | 06 | 0848 | SC | - .4 | 12 | - 3 | | - | 9 | 176 | 25 | 07 | 14 |
| SHL | 14.6N | 06 | 0848 | SC | | 13 | 2 | | - | 5 | 177 | 19 | 07 | 14 |
| UJJ | 13.5N | 06 | 0848 | SC | - .2 | 15 | - 3 | | - | 7 | 180 | 25 | 07 | 14 |
| ABG | 09.5N | 06 | 0848 | SC | - .3 | 12 | - 3 | 06(5) | 7 | 7 | -- | 40 | 07 | 14 |
| HYB | 07.6N | 06 | 0847 | SC | - .2 | 15 | - 3 | 06(5,7) | 7 | 6 | 197 | 36 | 07 | 19 |
| GUA | 04.0N | 06 | 0847 | SC | -- | 12 | - 3 | 06(5) | 5 | 10 | 90 | 40 | 07 | 08 |
| ANN | 01.5N | 06 | 0848 | SC | - .8 | 30 | 7 | | - | 4 | 178 | 102 | 07 | 14 |
| TRD | 01.2S | 06 | 0848 | SC | .1 | 35 | 39 | | - | 4 | 181 | 153 | 07 | 14 |
| PMG | 18.6S | 06 | 0847 | SC | .2 | 17 | 13 | 06(5,6) | 6 | 11 | 120 | 70 | 07 | 12 |
| HER | 33.7S | 06 | 0847 | SC | 1 | 11 | 7 | 06(5) | 6 | 61 | 134 | 162 | 07 | 06 |
| GNA | 43.2S | 06 | 0847 | SC* | 1.9* | 21 | 12 | 06(7) | 6 | 25 | 180 | 140 | 07 | 12 |
| KGL | 56.5S | 06 | 0847 | SC | 8 | 30 | - 8 | 06(6,7,8) 07(1) | 7 | -- | -- | -- | 07 | 06 |
| COL | 64.6N | 08 | 1346 | SC* | -14 | -148 | -15 | 08(6) 09(2,3,5) | 5 | 95 | 880 | 350 | 09 | 15 |
| NEW | 55.1N | 08 | 1346 | SC* | 3 | 17 | 3 | 08(6) 09(1,2) | 5 | 25 | 92 | 117 | 09 | 21 |
| IRK | 41.0N | 08 | 1346 | SC* | 2 | 42 | 8 | 08(6) | 5 | 20 | 110 | 20 | 09 | 18 |
| HON | 21.1N | 08 | 1345 | SC | -- | 14 | 5 | 08(7) | 4 | 6 | 116 | 26 | 09 | 18 |
| JAI | 17.3N | 08 | 1345 | SC | - .9 | 23 | - 6 | | - | 4 | 67 | 22 | 09 | 14 |
| SHL | 14.6N | 08 | 1345 | SC | - .1 | 22 | 3 | | - | 3 | 90 | 30 | 09 | 14 |
| UJJ | 13.5N | 08 | 1345 | SC | - .5 | 25 | - 6 | | - | 3 | 72 | 29 | 09 | 14 |
| ABG | 09.5N | 08 | 1345 | SC | - .7 | 19 | - 6 | 08(6) | 5 | 3 | 62 | 27 | 09 | 14 |
| HYB | 07.6N | 08 | 1345 | SC | - .3 | 22 | - 1 | 08(6,8) 09(5) | 4 | 3 | 67 | 26 | 09 | 23 |
| GUA | 04.0N | 08 | 1345 | SC | -- | 17 | - 3 | 09(1) | 5 | -- | 100 | 40 | 09 | 15 |
| ANN | 01.5N | 08 | 1345 | SC | - 1.2 | 26 | 14 | | - | 4 | 111 | 61 | 09 | 14 |
| TRD | 01.2S | 08 | 1345 | SC | .1 | 18 | 24 | | - | 4 | 152 | 87 | 09 | 14 |
| HER | 33.7S | 08 | 1345 | SC* | 4 | 26 | 18 | 08(6) | 5 | 22 | 59 | 77 | 09 | 06 |
| KGL | 56.5S | 08 | 1345 | SCA | 40 | 88 | 28 | 08(8) | 5 | -- | -- | -- | [illegible] | 14 |
| HYB | 07.6N | 15 | 0630 | .. | .. | .. | .. | 15(6,7) | 4 | 4 | 137 | 33 | 17 | 19 |
| HYB | 07.6N | 19 | 1900 | .. | .. | .. | .. | 20(3,6) | 4 | 3 | 171 | 42 | 21 | 14 |
| FRD | 49.6N | 22 | 20-- | .. | .. | .. | .. | 23(1) | 5 | 18 | 82 | 47 | 26 | -- |
| HYB | 07.6N | 22 | 1700 | .. | .. | .. | .. | 22(8) 23(1) | 4 | 3 | 125 | 47 | 23 | 19 |
| KGL | 56.5S | 22 | 21-- | .. | .. | .. | .. | 22(8) | 5 | -- | -- | -- | 23 | 04 |
| NEW | 55.1N | 23 | 2138 | SC* | 2 | 13 | -- | 25(2,3) | 5 | 25 | 166 | 136 | 28 | 07 |
| IRK | 41.0N | 23 | 2141 | SC* | 2.8 | 14 | 4 | 26(7) | 6 | 17 | 118 | 35 | 28 | 12 |
| SHL | 14.6N | 23 | 1200 | .. | .. | .. | .. | | - | 5 | 156 | 58 | 25 | 01 |
| UJJ | 13.5N | 23 | 1200 | .. | .. | .. | .. | | - | 4 | 149 | 29 | 25 | 01 |
| ABG | 09.5N | 23 | 1200 | .. | .. | .. | .. | 24(5,6,7,8) | 5 | 4 | 159 | 26 | 25 | 01 |
| HYB | 07.6N | 23 | 2138 | SC | - .2 | 10 | - 1 | 24(6,7) | 5 | 4 | 199 | 27 | 25 | 23 |
| ANN | 01.5N | 23 | 1200 | .. | | | | | - | 4 | 227 | 58 | 25 | 01 |
| TRD | 01.2S | 23 | 1200 | .. | .. | .. | .. | | - | 3 | 247 | 111 | 25 | 01 |
| COL | 64.6N | 24 | 13-- | .. | .. | .. | .. | 25(3) | 7 | 168 | 1180 | 580 | 28 | 00 |
| SIT | 60.0N | 24 | 13-- | .. | .. | .. | .. | 25(3) | 7 | -- | 580 | 420 | 27 | 21 |
| WIT | 54.2N | 24 | 16-- | .. | .. | .. | .. | 26(7) | 7 | 39 | 250 | 70 | 26 | 22 |
| HYB | 07.6N | 26 | 0300 | .. | .. | .. | .. | 26(7) | 5 | 3 | 123 | 28 | 28 | 01 |

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HYDERABAD
JAIPUR IRKUTSK KERGUELEN NEWPORT PORT MORESBY SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

## PIONEER XII (VENUS ORBITER)
Interplanetary Magnetic Field Magnitudes

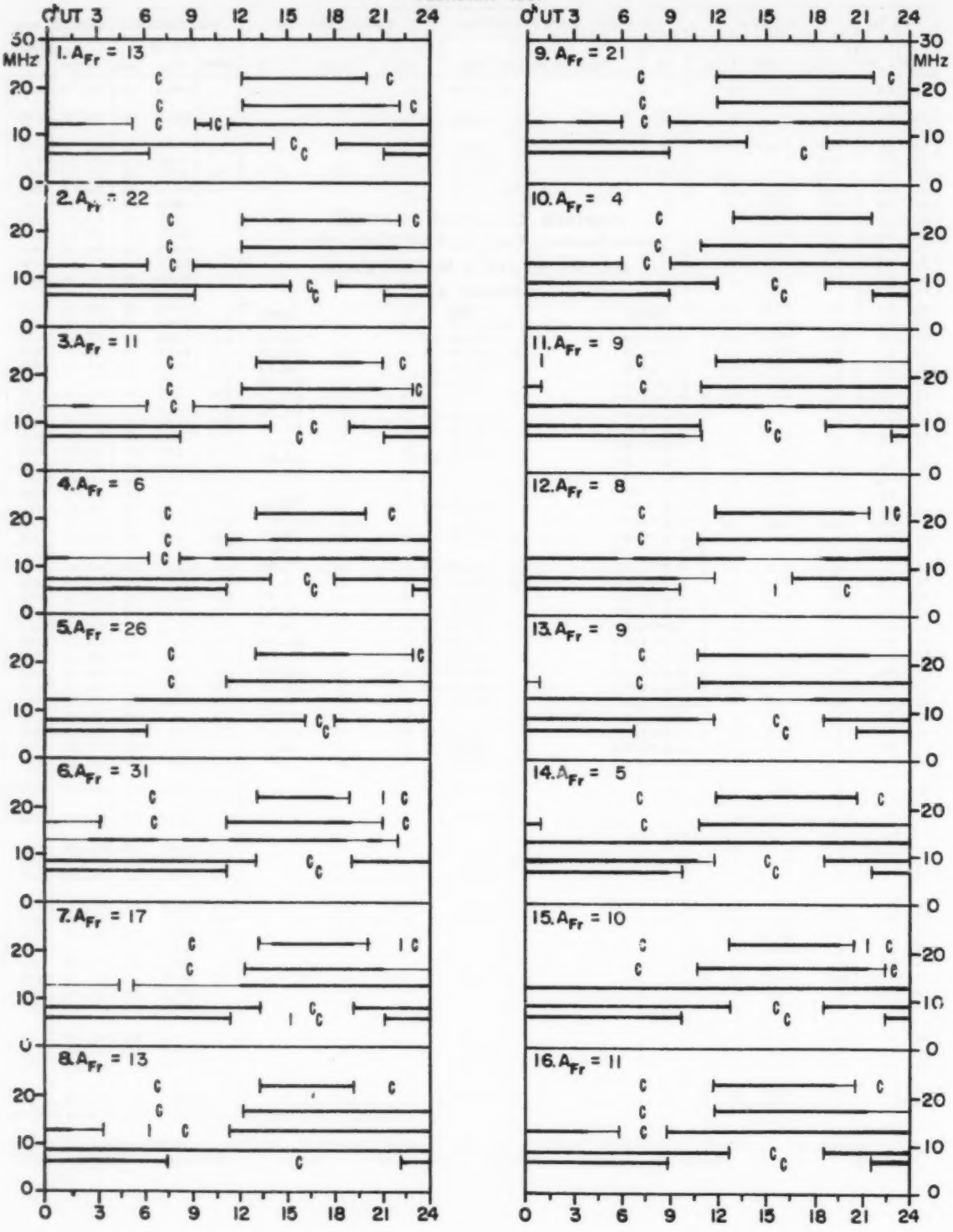
### MAGNETIC FIELD MAGNITUDES

FEBRUARY 1981

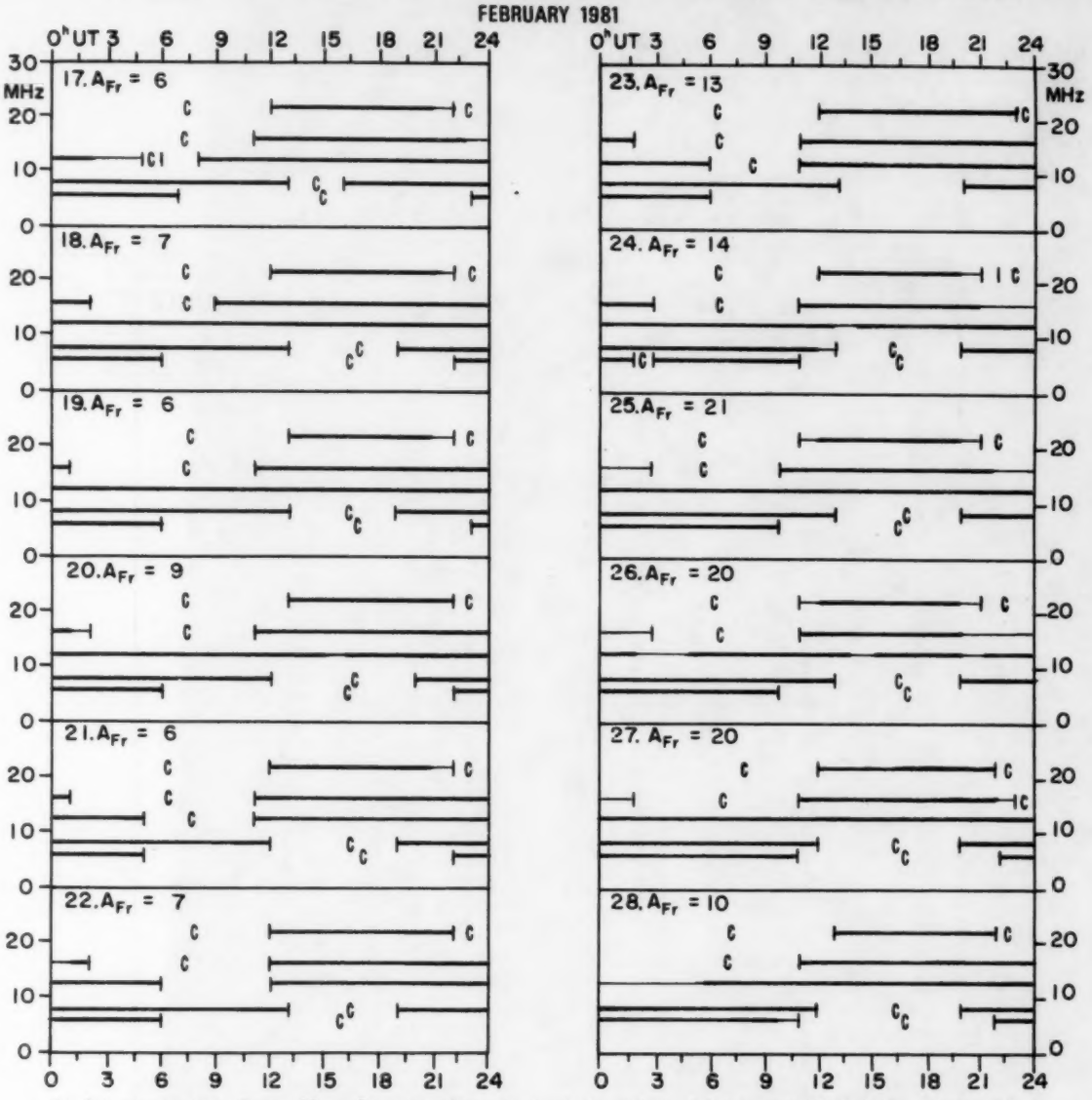
| DATE | TIME | BMAG |
|---|---|---|
| 02/01/81 | 10:56:50 | 14.01 |
| 02/02/81 | 10:58:42 | 15.28 |
| 02/03/81 | 11:01:33 | 10.77 |
| 02/04/81 | 11:03:02 | 10.90 |
| 02/05/81 | 11:08:55 | 11.21 |
| 02/06/81 | 11:08:47 | 12.36 |
| 02/07/81 | 11:10:11 | 14.35 |
| 02/08/81 | | ---- |
| 02/09/81 | 11:13:43 | 12.63 |
| 02/10/81 | | ---- |
| 02/11/81 | | ---- |
| 02/12/81 | 11:16:41 | 10.80 |
| 02/13/81 | | ---- |
| 02/14/81 | 10:48:06 | 9.86 |
| 02/15/81 | | ---- |
| 02/16/81 | 11:18:59 | 13.45 |
| 02/17/81 | 11:23:14 | 8.63 |
| 02/18/81 | 11:22:24 | 7.48 |
| 02/19/81 | 11:23:42 | 14.51 |
| 02/20/81 | 11:26:16 | 8.41 |
| 02/21/81 | 11:26:06 | 12.43 |
| 02/22/81 | 11:27:46 | 11.80 |
| 02/23/81 | 11:22:31 | 13.46 |
| 02/24/81 | 11:28:43 | 11.72 |
| 02/25/81 | 11:31:14 | 8.38 |
| 02/26/81 | | ---- |
| 02/27/81 | 11:36:08 | 10.47 |
| 02/28/81 | 11:34:21 | 8.93 |

# TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1981



# TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH




Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0, and 22.5 MHz, observed on a Lüchow-New York circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

## RADIO PROPAGATION QUALITY INDICES

### FEBRUARY 1981

| DAY | TOKYO | NEW YORK | TEHERAN | OSLO | BRACKNELL |
|---|---|---|---|---|---|
| 1 | 5.5 | 8.6 | 3.2 | 12.0 | 14.0 |
| 2 | 5.3 | 8.6 | 5.1 | 12.0 | 13.8 |
| 3 | 5.4 | 8.7 | 4.0 | 11.6 | 14.1 |
| 4 | 5.7 | 8.6 | 3.6 | 12.7 | 14.1 |
| 5 | 5.5 | 8.7 | 4.2 | 11.3 | 14.1 |
| 6 | 5.2 | 8.0 | 3.8 | 11.5 | 14.1 |
| 7 | 4.9 | 8.0 | 3.5 | 10.0 | 13.8 |
| 8 | 5.3 | 8.1 | 3.9 | 11.6 | 14.0 |
| 9 | 5.1 | 8.2 | 3.3 | 11.2 | 13.9 |
| 10 | 5.0 | 8.3 | 5.2 | 10.8 | 14.1 |
| 11 | 5.4 | 8.5 | 4.3 | 11.2 | 13.9 |
| 12 | 5.2 | 8.9 | 5.3 | 10.9 | 14.1 |
| 13 | 4.9 | 8.6 | 7.9 | 11.3 | 14.3 |
| 14 | 5.0 | 9.0 | 6.3 | 11.4 | 14.5 |
| 15 | 5.8 | 8.9 | 6.8 | 12.0 | 14.1 |
| 16 | 5.3 | 9.2 | 7.0 | 12.4 | 14.3 |
| 17 | 5.3 | 9.1 | 7.1 | 11.8 | 14.7 |
| 18 | 5.8 | 9.3 | 7.6 | 12.3 | 14.6 |
| 19 | 5.3 | 9.1 | 5.2 | 11.6 | 14.2 |
| 20 | 5.0 | 8.6 | 7.0 | 12.3 | 14.0 |
| 21 | 5.5 | 8.8 | 6.2 | 12.0 | 14.1 |
| 22 | 6.2 | 8.7 | 6.6 | 12.9 | 13.9 |
| 23 | 5.8 | 9.4 | 7.6 | 12.9 | 14.3 |
| 24 | 5.8 | 9.2 | 7.9 | 12.9 | 14.5 |
| 25 | 5.6 | 8.7 | 8.6 | 12.3 | 14.4 |
| 26 | 5.6 | 8.4 | 5.1 | 12.0 | 14.2 |
| 27 | 5.4 | 8.4 | 6.2 | 11.8 | 13.6 |
| 28 | 6.1 | 8.8 | 7.3 | 12.8 | 14.0 |
| MEAN | 5.4 | 8.7 | 5.7 | 11.8 | 14.1 |

SGD 440 Part I (Prompt)

# LATE DATA

## Contents

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| Cosmic Rays Alert, Deep River and Climax Jan 1981 | |
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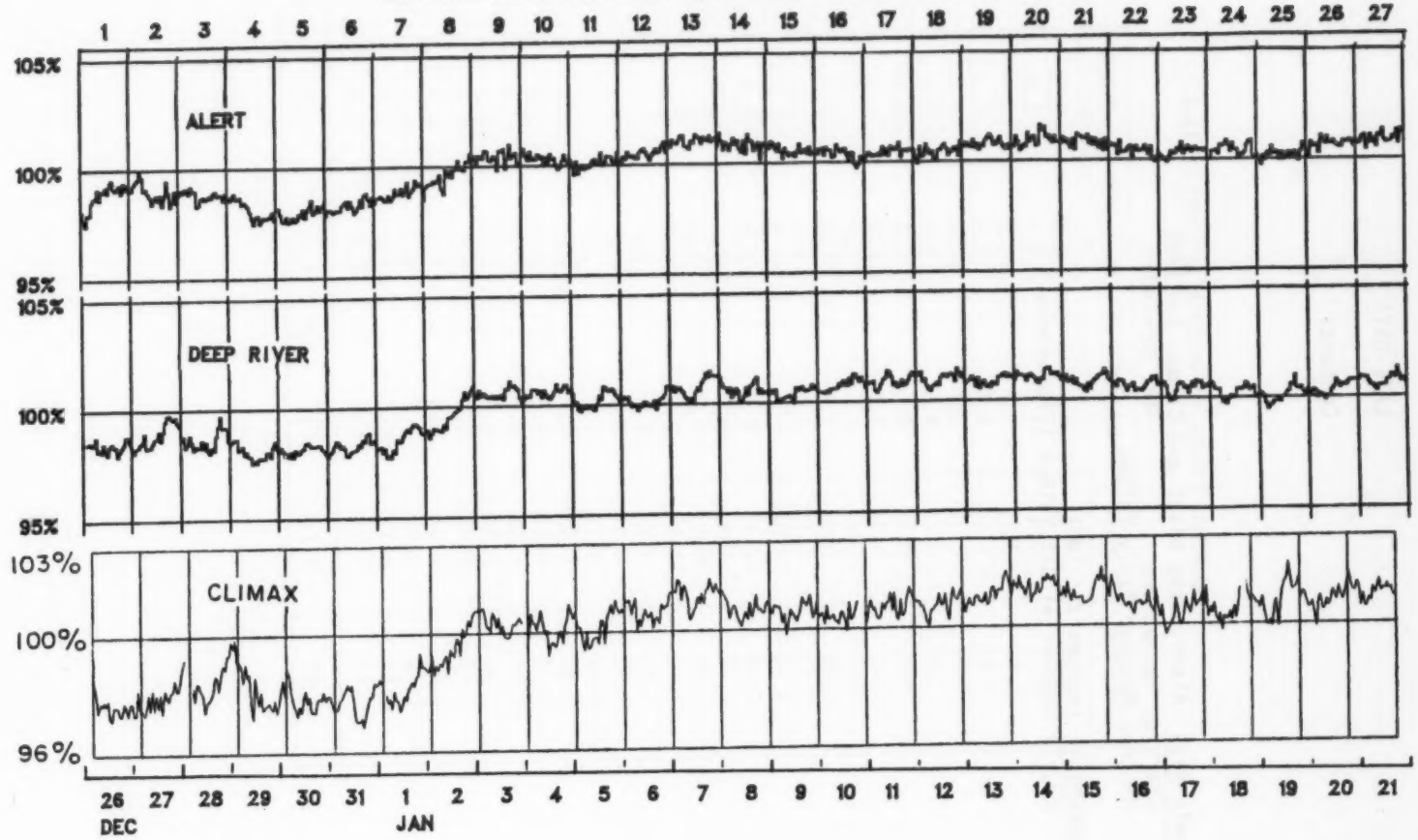
| Geomagnetic Indices Jan 1981 | |
| Hourly Equatorial Dst Values (Provisional) | 160 |

## COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2015 (December 1980–January 1981)



# COSMIC RAY INDICES
## (Neutron Monitors)

| Jan 1981 | ALERT Average (cts/h)/100 | DEEP RIVER Average (cts/h)/300 | CLIMAX Average (cts/h)/100 |
|---|---|---|---|
| 1 | 6562.4 | 6171.4 | 3653.3 |
| 2 | 6613.1 | 6238.0 | 3706.8 |
| 3 | 6668.0 | 6300.8 | 3731.9 |
| 4 | 6662.0 | 6303.4 | 3726.1 |
| 5 | 6647.3 | 6279.0 | 3727.5 |
| 6 | 6672.7 | 6273.4 | 3746.4 |
| 7 | 6711.6 | 6313.6 | 3766.1 |
| 8 | 6697.2 | 6302.8 | 3747.4 |
| 9 | 6678.8 | 6292.8 | 3743.8 |
| 10 | 6666.8 | 6312.7 | 3736.6 |
| 11 | 6671.0 | 6321.0 | 3747.8 |
| 12 | 6671.8 | 6328.4 | 3749.7 |
| 13 | 6693.8 | 6321.5 | 3760.8 |
| 14 | 6703.9 | 6333.4 | 3771.0 |
| 15 | 6697.3 | 6318.4 | 3763.4 |
| 16 | 6670.7 | 6305.1 | 3751.9 |
| 17 | 6664.0 | 6294.5 | 3737.6 |
| 18 | 6669.0 | 6280.7 | 3739.4 |
| 19 | 6654.3 | 6273.0 | 3751.7 |
| 20 | 6685.3 | 6288.3 | 3749.9 |
| 21 | 6701.2 | 6310.8 | 3760.6 |
| 22 | 6694.5 | 6297.1 | 3752.6 |
| 23 | 6645.9 | 6273.4 | 3736.7 |
| 24 | 6638.6 | 6285.9 | 3754.9 |
| 25 | 6687.1 | 6284.0 | 3764.7 |
| 26 | 6670.8 | 6288.0 | 3772.1 |
| 27 | 6700.0 | 6305.9 | 3770.9 |
| 28 | 6709.7 | 6337.7 | 3775.9 |
| 29 | 6715.8 | 6338.5 | 3769.8 |
| 30 | 6574.9 | 6248.6 | 3725.5 |
| 31 | 6498.3 | 6150.8 | 3656.8 |
| MEAN | 6664.5 | 6289.5 | 3744.1 |

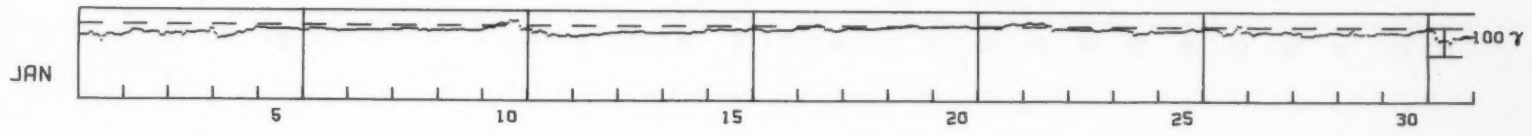
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

# HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

JANUARY 1981

(Time-UT)

(Units-Gammas)

| DAY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -45 | -44 | -44 | -45 | -40 | -33 | -33 | -43 | -44 | -45 | -49 | -60 | -49 | -43 | -38 | -36 | -35 | -39 | -44 | -41 | -43 | -46 | -39 | -36 |
| 2 | -34 | -33 | -31 | -26 | -22 | -20 | -25 | -27 | -28 | -30 | -34 | -31 | -29 | -29 | -27 | -29 | -32 | -33 | -36 | -41 | -40 | -38 | -33 | -31 |
| 3 | -38 | -34 | -34 | -30 | -31 | -33 | -36 | -43 | -37 | -31 | -33 | -35 | -34 | -31 | -28 | -26 | -25 | -26 | -24 | -26 | -33 | -25 | -17 | -19 |
| 4 | -32 | -40 | -50 | -47 | -44 | -45 | -49 | -39 | -38 | -39 | -37 | -35 | -30 | -28 | -31 | -32 | -26 | -21 | -22 | -21 | -27 | -16 | -11 | -13 |
| 5 | -15 | -12 | -14 | -17 | -19 | -18 | -19 | -17 | -19 | -16 | -13 | -17 | -20 | -19 | -18 | -19 | -19 | -21 | -19 | -20 | -19 | -24 | -26 | -21 |
| 6 | -23 | -25 | -24 | -12 | -16 | -15 | -16 | -16 | -15 | -16 | -19 | -20 | -23 | -21 | -22 | -19 | -20 | -25 | -27 | -25 | -23 | -23 | -21 | -19 |
| 7 | -19 | -19 | -20 | -18 | -17 | -18 | -19 | -21 | -17 | -17 | -13 | -18 | -19 | -22 | -22 | -21 | -19 | -19 | -16 | -15 | -16 | -17 | -14 | -15 |
| 8 | -18 | -17 | -18 | -14 | -12 | -10 | -10 | -12 | -15 | -12 | -15 | -12 | -15 | -23 | -20 | -15 | -16 | -21 | -26 | -20 | -17 | -17 | -21 | -22 |
| 9 | -18 | -14 | -19 | -23 | -20 | -16 | -16 | -15 | -15 | -15 | -16 | -15 | -13 | -13 | -22 | -22 | -21 | -22 | -20 | -21 | -22 | -20 | -16 | -13 |
| 10 | -11 | -9 | -7 | -5 | -7 | -7 | -3 | 3 | 6 | 9 | 7 | 1 | 1 | 10 | 16 | 10 | 12 | 16 | 13 | -7 | -15 | -13 | -12 | -17 |
| 11 | -15 | -20 | -27 | -23 | -27 | -19 | -16 | -27 | -25 | -32 | -36 | -34 | -31 | -34 | -36 | -39 | -42 | -39 | -38 | -36 | -32 | -37 | -42 | -42 |
| 12 | -38 | -38 | -37 | -34 | -35 | -35 | -34 | -33 | -30 | -29 | -29 | -31 | -32 | -32 | -31 | -28 | -25 | -27 | -26 | -23 | -23 | -23 | -23 | -22 |
| 13 | -21 | -19 | -23 | -22 | -24 | -26 | -26 | -24 | -20 | -18 | -19 | -18 | -17 | -23 | -28 | -27 | -27 | -30 | -30 | -30 | -29 | -26 | -25 | -26 |
| 14 | -26 | -24 | -25 | -24 | -23 | -24 | -25 | -26 | -25 | -27 | -26 | -27 | -31 | -31 | -28 | -22 | -20 | -22 | -21 | -23 | -23 | -20 | -14 | -11 |
| 15 | -14 | -20 | -20 | -15 | -13 | -12 | -11 | -12 | -15 | -17 | -16 | -13 | -14 | -14 | -12 | -12 | -12 | -18 | -21 | -20 | -17 | -11 | -10 | -15 |
| 16 | -14 | -9 | -13 | -13 | -15 | -21 | -23 | -25 | -22 | -16 | -15 | -21 | -18 | -13 | -16 | -19 | -18 | -19 | -18 | -17 | -14 | -12 | -9 | -7 |
| 17 | -7 | -8 | -9 | -8 | -7 | -6 | -1 | -1 | 0 | 4 | 4 | 3 | -6 | -9 | -14 | -17 | -16 | -16 | -22 | -23 | -19 | -16 | -15 | -13 |
| 18 | -11 | -10 | -6 | -11 | -13 | -14 | -12 | -13 | -12 | -12 | -14 | -13 | -15 | -15 | -14 | -12 | -11 | -8 | -9 | -8 | -6 | -6 | -7 | -6 |
| 19 | -5 | -4 | -4 | -3 | -1 | -2 | -4 | -2 | 0 | 1 | 4 | 4 | 4 | 2 | 0 | -4 | -8 | -8 | -4 | -3 | -2 | -1 | -1 | -5 |
| 20 | -7 | -8 | -5 | -4 | -2 | -2 | -2 | -2 | 0 | 1 | 1 | -1 | -1 | -1 | 0 | 0 | 2 | -2 | -6 | -9 | -11 | -11 | -7 | -3 |
| 21 | -3 | -5 | -10 | -10 | -8 | -3 | -3 | -4 | -10 | -12 | -10 | -7 | -2 | 2 | 5 | 6 | 8 | 10 | 11 | 9 | 7 | 6 | 8 | 9 |
| 22 | 9 | 12 | 13 | 14 | 12 | 8 | 10 | 9 | 12 | 13 | 12 | 4 | -1 | -1 | -3 | -14 | -9 | -8 | -10 | -8 | -8 | -7 | -12 | -12 |
| 23 | -14 | -11 | -9 | -9 | -12 | -13 | -15 | -15 | -13 | -13 | -15 | -16 | -8 | -17 | -20 | -18 | -13 | -12 | -12 | -12 | -12 | -10 | -7 | -10 |
| 24 | -9 | -8 | -10 | -11 | -14 | -14 | -12 | -17 | -18 | -20 | -28 | -27 | -23 | -21 | -23 | -22 | -22 | -23 | -18 | -13 | -16 | -21 | -18 | -18 |
| 25 | -20 | -21 | -17 | -14 | -18 | -20 | -20 | -19 | -18 | -18 | -20 | -17 | -15 | -13 | -14 | -10 | -9 | -6 | -6 | -13 | -18 | -17 | -11 | -9 |
| 26 | -6 | -5 | -6 | -5 | -6 | -5 | -6 | -13 | -19 | -23 | -30 | -27 | -23 | -24 | -25 | -20 | -14 | -7 | 2 | -4 | -18 | -17 | -15 | -17 |
| 27 | -24 | -28 | -32 | -25 | -20 | -19 | -18 | -17 | -17 | -17 | -21 | -25 | -21 | -25 | -26 | -25 | -23 | -20 | -16 | -14 | -16 | -18 | -22 | -27 |
| 28 | -28 | -21 | -18 | -24 | -33 | -36 | -37 | -34 | -31 | -31 | -31 | -26 | -27 | -27 | -23 | -26 | -24 | -25 | -20 | -18 | -19 | -19 | -19 | -19 |
| 29 | -25 | -28 | -30 | -28 | -29 | -25 | -16 | -11 | -24 | -26 | -30 | -31 | -24 | -25 | -27 | -30 | -31 | -28 | -28 | -24 | -20 | -22 | -19 | -18 |
| 30 | -21 | -23 | -25 | -23 | -22 | -20 | -20 | -22 | -26 | -27 | -30 | -29 | -28 | -24 | -20 | -16 | -14 | -13 | -11 | -12 | -12 | -10 | -8 | -9 |
| 31 | -7 | -7 | -6 | -19 | -40 | -49 | -54 | -46 | -44 | -43 | -47 | -56 | -51 | -40 | -39 | -43 | -41 | -38 | -33 | -31 | -34 | -33 | -29 | -31 |